

**Vol. I**

**TRANSCRIPT OF RECORD**

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**Supreme Court of the United States**

**OCTOBER TERM. 1938**

**No. 466**

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HONOLULU OIL CORPORATION, LTD., AND M. O.  
JOHNSTON OIL FIELD SERVICE CORPORATION,  
PETITIONERS,

*vs.*

ERLE P. HALLIBURTON AND HALLIBURTON OIL  
WELL CEMENTING COMPANY

---

**No. 479**

ERLE P. HALLIBURTON AND HALLIBURTON OIL  
WELL CEMENTING COMPANY, PETITIONERS,

*vs.*

HONOLULU OIL CORPORATION, LTD., AND M. O.  
JOHNSTON OIL FIELD SERVICE CORPORATION

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ON WRITS OF CERTIORARI TO THE UNITED STATES CIRCUIT COURT  
OF APPEALS FOR THE NINTH CIRCUIT

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PETITION FOR CERTIORARI FILED NOVEMBER 8, 1938.

PETITION FOR CERTIORARI FILED NOVEMBER 18, 1938.

CERTIORARI GRANTED DECEMBER 19, 1938.



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**VOL. I**

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[fol. 1] Names and addresses of solicitors omitted in printing.

[fols. 2-3] Citation, in usual form, showing service on K. K. Wright, filed January 26, 1937, omitted in printing.

[fol. 4]

**IN UNITED STATES DISTRICT COURT, SOUTHERN  
DISTRICT OF CALIFORNIA, NORTHERN DIVI-  
SION**

In Equity. No. D-56

In Infringement of Letters Patent No. 1,930,987

ERLE P. HALLIBURTON and HALLIBURTON OIL WELL CEMENT-  
ING COMPANY, a Corporation, Plaintiffs,

vs.

HONOLULU OIL CORPORATION, LTD., a Corporation and M. O.  
Johnston Oil Field Service Corporation, a Corporation,  
Defendants

**BILL OF COMPLAINT—Filed November 3, 1933**

To the Honorable the Judges of the United States District  
Court for the Southern District of California, Northern  
Division:

Erle P. Halliburton and Halliburton Oil Well Cementing  
Company, a corporation, plaintiffs herein, bring this their  
Bill of Complaint against the defendants, Honolulu Oil Cor-  
poration, Ltd., and M. O. Johnston Oil Field Service Cor-  
poration for acts of infringement of Letters Patent com-  
mitted and threatened to be committed within the Southern  
[fol. 5] District of California, Northern Division, and else-  
where, and Plaintiffs Complain and Allege as Follows:

**I**

That Plaintiff, Erle P. Halliburton, is an inhabitant of the  
State of California, residing at Los Angeles, in said State,  
and within the Southern District of California, and Plaintiff,  
Halliburton Oil Well Cementing Company, is a corporation

organized and existing under and by virtue of the laws of the State of Delaware.

## II

That Defendant, Honolulu Oil Corporation, Ltd., is a corporation organized and existing under and by virtue of the laws of the State of Delaware, with a regular and established place of business in Kern County, California, within the Northern Division of the Southern District of California; that defendant, M. O. Johnston Oil Field Service Corporation is a corporation organized and existing under and by virtue of the laws of the State of California with a regular and established place of business at Los Angeles County, within the Southern District of California.

That Each of said defendants has a regular and established place of business within the Southern District of California wherein, as well as elsewhere, the defendants have committed and threatened to commit the acts of infringement of Letters Patent complained of herein.

## III

That the ground upon which this Court's jurisdiction depends is that this is a suit in equity arising under the patent laws of the United States of America.

[fol. 6]

## IV

That heretofore, to-wit, prior to February 10th, 1926, John T. Simmons, then a resident of El Dorado, Arkansas, was the original and first inventor of a new and useful invention to-wit: Method and Apparatus for Testing the Productivity of Formations Encountered in Wells, not known or used by others before his invention or discovery thereof or patented or described in any printed publication in the United States of America or any foreign country before his invention or discovery thereof, or more than two years prior to his application for Letters Patent thereon in the United States of America, or in public use or on sale in the United States for more than two years prior to such application for Letters Patent therefor and not patented; that thereupon, to-wit, on February 10th, 1926, the said John T. Simmons made an application in writing in due form of law to the Commissioner of Patents of the United States of America for Letters Patent, in all respects with

the conditions and requisities of said application being numbered Serial No. 87,323;

That Thereafter by mesne assignment in writing the said John T. Simmons assigned, transferred and set over to the plaintiff Erle P. Halliburton, all of the right, title and interest in and to said application for Letters Patent for Method and Apparatus for Testing the Productivity of Formations Encountered in Wells, and the inventions described and disclosed therein, and requested the United States Patent Office to issue any and all Letters Patent issued on said application to plaintiff Erle P. Halliburton.

[fol. 7]

## V

That after due proceedings had and due examination made by the Commissioner of Patents upon the aforesaid application as to the patentability of said invention, on October 17th, 1933, Letters Patent of the United States of America No. 1,930,987, signed, sealed and executed in due form of law and bearing date the day and year aforesaid, were granted, issued and delivered by the Commissioner of Patents of the United States of America to the aforesaid plaintiff Erle P. Halliburton; that thereby there was granted and secured to the said Erle P. Halliburton, his representatives and assigns, for the full term of seventeen years from and after said October 17th, 1933, the exclusive right and liberty of making; using or vending to others to be used the said inventions throughout the United States of America and the territories thereof, all as will more fully and at large appear in and by said original Letters Patent or a duly certified copy thereof ready in court to be produced as may be required.

## VI

That Plaintiff Erle P. Halliburton, by a written instrument dated and delivered on or about the 9th day of October, 1933, granted to Halliburton Oil Well Cementing Company a corporation, of the State of Delaware, for the full term of the aforesaid Letters Patent No. 1,930,987, and for the full term of and under any and all Letters Patent granted or procured on said application for Letters Patent Serial No. 87,323 filed February 10th, 1926, unless sooner terminated as in such written instrument provided, the sole and exclusive right, license and liberty to employ the inventions described and claimed in said application for Letters Pat-

[fol. 8] ent, Serial No. 87,323, and the inventions described and claimed in said Letters Patent No. 1,930,987, in and throughout the United States of America, and the territories thereof, upon the terms and conditions in said instrument set forth, including the payment of a royalty upon each and every testing job performed under said license by said Halliburton Oil Well Cementing Company to plaintiff, Erle P. Halliburton; and at all times since the 17th day of October, 1933, said Halliburton Oil Well Cementing Company was to have and now has the sole and exclusive right, license and liberty to employ said invention patented in said Letters Patent in and throughout the United States of America, and the territories thereof; that ever since the 17th day of October, 1933, plaintiff Halliburton Oil Well Cementing Company, a corporation has been and now is the owner of the exclusive license in and to any and all rights under and by virtue of said Letters Patent No. 1,930,987 for oil well testing in and for all of the United States of America and the territories thereof; and at all times since the grant of said Letters Patent No. 1,930,987, plaintiff Erle P. Halliburton has been and now is the sole and exclusive owner thereof.

## VII

That upon the completion of the aforesaid invention plaintiff Erle P. Halliburton introduced the said invention to the oil well industry and proceeded to put the same into practical use for testing oil wells particularly in the States of Oklahoma, Texas, Kansas, Arkansas, Louisiana, Wyoming, Montana, New Mexico and California; and ever since Feb-[fol. 9] ruary, 1926, plaintiff Erle P. Halliburton has had invested and expended large sums of money and has been to great trouble in building up and conducting the business of testing oil wells employing the process and apparatus patented in and by said Letters Patent No. 1,930,987 in the States of Oklahoma, Texas, Kansas, Arkansas, Louisiana, Wyoming, Montana, New Mexico and California; that ever since on or about the 9th day of October, 1933, Halliburton Oil Well Cementing Company, a corporation, one of the plaintiffs herein, has had invested and expended large sums of money and been to great trouble in building up and conducting a business employing the process and apparatus patented in said Letters Patent No. 1,930,987, particularly in the states above enumerated; that the apparatus and meth-

ods patented in said Letters Patent No. 1,930,987 have come into extended and commercial use and have become the standard apparatus and processes employed in the testing of formations encountered in the drilling of oil wells throughout the oil producing fields of the United States; that said inventions have been and are of great benefit and advantage to the oil industry of the entire world.

### VIII

That subsequent to the grant of said Letters Patent No. 1,930,987 the defendant Honolulu Oil Corporation, Ltd., a corporation, has infringed upon said Letters Patent by employing the processes and apparatus patented and claimed in and by said Letters Patent in the testing of formations encountered in oil wells in Kern County, in the Northern Division of the Southern District of California, and elsewhere; that said defendant, M. O. Johnston Oil Field Service Corporation has infringed upon said Letters Patent [fol. 10] by manufacturing apparatus and employing the processes patented and claimed in and by said Letters Patent and using said apparatus and processes in testing formations encountered in wells drilled in the County of Kern, State of California, and elsewhere; that the above named defendants have jointly and severally infringed said Letters Patent by using apparatus and employing the processes patented in and by said Letters Patent in the County of Kern, and elsewhere, in the Southern District of California; that said infringement by said defendants has been without the consent of the plaintiffs and contrary to the written protests made by plaintiffs to defendants; that said infringement has been proceeded with by said defendants with full and actual knowledge of the grant of said Letters Patent No. 1,930,987 and of the rights held therein by plaintiffs; that said infringements have been deliberate and intentional, and said defendants are now continuing in said infringement in the Northern Division of the Southern District of California, and intend to continue the same unless restrained by this Court; that plaintiffs do not know exactly the number of tests of formations encountered in wells in which defendants have infringed said Letters Patent by employing the said apparatus and processes, or the amounts of profits or damages gained by each of the defendants by said infringement; that plain-

tiffs have been seriously and irreparably damaged and injured by the infringing acts of the defendants aforesaid, and will be further seriously and irreparably damaged if said infringement be permitted to continue.

Wherefore, Plaintiffs Pray

## 1

That a temporary Writ of Injunction be issued out of and under the seal of this Court enjoining and restraining the defendants Honolulu Oil Corporation, Ltd., and M. O. Johnston Oil Field Service Corporation, their agents, attor-[fol. 11] neys, servants, employees, associates, workmen and confederates, and each and every one of them, from directly or indirectly in any manner employing or using the apparatus or methods patented in said Letters Patent No. 1,930,987; and that upon final hearing of this cause, said injunction be made permanent.

## 2

That defendants Honolulu Oil Corporation, Ltd., and M. O. Johnston Oil Field Service Corporation, and each of them, be Ordered, Adjudged and Decreed to account to and pay over to plaintiffs all profits and advantages realized by defendants, and each of them, from the infringement complained of herein; and all damages sustained by plaintiffs by reason of said infringement, and that the Court may increase the actual damages as assessed to a sum equal to three times the amount of such assessment in accordance with the statute in such case made and provided under the circumstances of this wilful and unjust infringement committed by the said defendants as hereinbefore set forth, together with the costs of this suit, and for such other, further or different recourse as to this Court may seem proper and in accord with equity and good conscience.

Erle P. Halliburton, Halliburton Oil Well Cementing Company, by Erle P. Halliburton, Its President.  
Lyon & Lyon, Leonard S. Lyon, Henry S. Richmond, Attorneys for Plaintiffs.

[fol. 12] *Duly sworn to by Erle P. Halliburton. Jurat omitted in printing.*

[File endorsement omitted.]

[fol. 13] IN UNITED STATES DISTRICT COURT

ANSWER OF DEFENDANTS—Filed December 14, 1933

Now come Honolulu Oil Corporation, Ltd., a corporation, and M. O. Johnston Oil Field Service Corporation, a corporation, defendants above named, and answering the Bill of Complaint filed herein by plaintiffs above named, admit, deny and allege as follows:

I

Answering paragraph I of said Bill of Complaint, defendants allege that they are without knowledge of the several allegations in said paragraph contained and, therefore, leave plaintiffs to make such proof thereof as they may be advised.

II

Answering paragraph II of said Bill of Complaint, the defendant Honolulu Oil Corporation, Ltd., admits that it is a corporation organized and existing under and by virtue of the laws of the State of Delaware, but denies that it has a regular and established place of business in Kern County, California, within the Northern Division of the Southern District; defendant M. O. Johnston Oil Field Service Corporation admits that it is a corporation organized and existing under and by virtue of the Laws of the State of California, and admits that it has a regular and established place of business in the County of Los Angeles, within the Southern District of California, but the aforesaid defendants, each for themselves, deny that they, or either of them, have committed or threatened to commit any acts of infringement as alleged in said Bill of Complaint within said Southern District of California, or at any other point [fol. 14] or place, or that they have jointly or severally, at any time or at any place, infringed upon any right of plaintiffs under Letters Patent No. 1,930,987 as alleged in said Bill of Complaint.

III

Answering paragraph III of said Bill of Complaint, defendants admit that if the alleged letters patent referred to in plaintiffs' Bill of Complaint is valid, the pretended cause of action attempted to be set forth in the Bill of Complaint arises under the patent laws of the United States,

and that, therefore, this court would have jurisdiction; but denies that such letters patent is valid or legal or of any force or effect at law whatsoever.

#### IV

Answering paragraph IV of said Bill of Complaint, defendants deny that prior to February 10, 1926, or at any other time or at all, one John T. Simmons, then a resident of El Dorado, Arkansas, was within the meaning of the patent laws of the United States, the inventor of a certain new and useful method and apparatus for testing the productivity of formation encountered in wells, and deny that said John T. Simmons was entitled to a patent thereon under the provisions of said patent laws, and further deny that upon said date or upon any other date said John T. Simmons did duly file in the Patent Office of the United States his application for said Letters Patent for said alleged invention, and deny that on October 17, 1933, or on any other date, Letters Patent of the United States No. 1,930,987 or any other number were granted or issued on said alleged application or on any other application to Erle P. Halliburton, and defendants not being advised except [fol. 15] by the allegation of said Bill of Complaint, leave to plaintiffs herein to make such proof thereof as they may deem advisable; and defendants, having no knowledge respecting the same, deny that said John T. Simmons did, on or prior to October 17, 1933, duly or otherwise assign his entire right, or any right, title and interest in and to said alleged Letters Patent No. 1,930,987, or to the alleged invention, or to any application made for Letters Patent, or that thereafter, or at any time, by deed of assignment duly executed and recorded in the United States Patent Office, the said alleged Letters Patent No. 1,930,987 and all or any right, title or interest therein or thereunder was transferred to the plaintiff Erle P. Halliburton, or that the plaintiff Erle P. Halliburton herein became or now is the sole and exclusive owner, or any owner, of all or any rights or privileges under said alleged Letters Patent, or that the said plaintiff Erle P. Halliburton is exclusively entitled, or in any manner entitled, to maintain this suit.

In further answer to paragraph IV of the Bill of Complaint, defendants deny that John T. Simmons was the first inventor of a new or useful invention concerned with the

Method and Apparatus for Testing the Productivity of Formations Encountered in Wells, not known or used by others before his alleged invention or discovery thereof or patented or described in any printed publication in the United States of America, or any foreign country before his alleged invention or discovery thereof for two years prior to his application for Letters Patent thereon in the United States of America, or more than two years prior to public use or sale of devices embodying his alleged invention or capable of being used in the alleged method thereof within the United States of America.

[fol. 16]

## V

Answering paragraph V of said Bill of Complaint, defendants admit that Letters Patent of the United States of America No. 1,930,987 were issued on October 17, 1933, to Erle P. Halliburton, but deny the validity of said patent thereon under the provisions of said patent law, and deny each and every other allegation in said paragraph contained.

## VI

Answering paragraph VI of said Bill of Complaint, defendants deny the existence of the rights alleged to be held by Erle P. Halliburton and/or Halliburton Oil Well Cementing Company under the provisions of Letters Patent No. 1,930,987, and being without knowledge as to the other allegations in said paragraph contained, leave plaintiffs to make such proof thereof as they may be advised.

## VII

Answering paragraph VII of said Bill of Complaint, defendants deny that plaintiff Erle P. Halliburton ever introduced the alleged invention of the Simmons patent to the oil well industry, and deny that he ever proceeded to put the same into practical or other use for testing oil wells, particularly in the states of Oklahoma, Texas, Arkansas, Kansas, Louisiana, Wyoming, Montana, New Mexico and/or California, and defendants further deny that since February, 1926, or at all, plaintiff Erle P. Halliburton has invested and/or expended large or any sums of money and/or has been to great or any trouble in building up and/or conducting a business of testing oil wells, employing the process and/or apparatus alleged to be patented in and/or by said

[fol. 17] Letters Patent No. 1,930,987 in the states of Oklahoma, Texas, Kansas, Arkansas, Louisiana, Wyoming, Montana, New Mexico and/or California, and defendants deny that since the 9th day of October, 1933, or at all, Halliburton Oil Well Cementing Company, a corporation, one of the plaintiffs herein, has invested large sums of money or any sums of money or has been to great or any trouble in building up and/or conducting a business employing the process and/or apparatus alleged to be patented in said Letters Patent No. 1,930,987 in the states above enumerated, or elsewhere, and defendants deny that the apparatus and/or methods alleged to be patented in said Letters Patent No. 1,930,987 have come into extended and/or commercial and/or use and/or have become the standard apparatus and/or processes employed in the testing of formations encountered in the drilling of oil wells throughout the oil producing fields of the United States or elsewhere, and/or that said alleged inventions have been and/or are of great or any benefit or advantage at all to the oil industry of the entire world, or any part thereof.

### VIII

Answering paragraphs VIII of the Bill of Complaint, defendant Honolulu Oil Corporation, Ltd., a corporation, denies that in an oil well in Kern County, in the Northern Division of the Southern District of California, or in any other point or place, that it has in any manner or form at any time or at any place infringed upon any alleged rights of plaintiffs alleged Letters Patent No. 1,930,987, as alleged in said Bill of Complaint, or otherwise, and M. O. Johnston Oil Field Service Corporation denies that it has in the Southern District of California, or at any other point or [fol. 18] place, or that it has in any manner or form, at any time or at any place, infringed upon any alleged rights of the plaintiffs under said alleged Letters Patent No. 1,930,987 by manufacturing apparatus and/or employing any processes claimed in said alleged Letters Patent, either severally or jointly, with the Honolulu Oil Corporation, Ltd., as alleged in said Bill of Complaint, or otherwise, and defendants further deny that they, or either of them, have made, used and/or sold and/or are now making, using and/or selling any device or devices for testing oil well formations in infringement of said alleged Letters Patent,

or any or all of the claims thereof without the consent of the plaintiffs herein or contrary to the written protests made by plaintiffs to defendants, or otherwise, and deny that defendants, or either of them, have infringed on any alleged rights alleged to be secured to plaintiffs under said alleged Letters Patent No. 1,930,987, and defendants deny that they are now continuing in said alleged infringement in the Northern Division of the Southern District of California, or at any other point or place, and deny that said plaintiffs have been seriously and/or irreparably damaged and/or injured, or at all, by the alleged acts of the defendants aforesaid, and/or that any serious or irreparable damage, or any damage, will result to said plaintiffs if said alleged infringement be permitted to continue.

### IX

And for a further and separate defense defendants allege that by reason of the state of the prior art existing at the [fol. 19] time of said alleged invention by said John T. Simmons of the apparatus and method alleged to be patented in and by said alleged Letters Patent No. 1,930,987, the said device or devices and the said method was not an invention and did not require the exercise of inventive faculties for its production and was not patentable, and for that reason said alleged Letters Patent No. 1,930,987 are null and void and have no effect.

### X

And for a further and separate defense defendants allege that the said John T. Simmons was not the original nor first nor sole nor any inventor nor discoverer of the alleged invention alleged to be patented in and by said Letters Patent No. 1,930,987, nor any nor all of the claims thereof, nor of any material or substantial part thereof, but prior to the alleged invention thereof by the said John T. Simmons and more than two years prior to the filing of the application for said letters patent, the said alleged invention and every material and substantial part thereof had been shown, described and patented in and by each of the following Letters Patent of the United States of America, and had been invented by each of the patentees named in each of said letters patent and each of said patentees is the first and original inventor thereof, and at all times was

using reasonable diligence in adapting and perfecting the same, and the respective places of residence of said patentees are, as defendants are informed and believe, respectively set forth in said letters patent, to wit:

[fol. 20]

	Number	Name of Patentee	Date of Patent
	58,837	Q. Kewley	Oct. 16, 1866
	68,350	Burr & Wakelee	Sept. 3, 1867
	73,577	Carll	Jan. 21, 1868
	91,522	Collins	Jan. 22, 1869
	157,648	Stevenson	Dec. 8, 1874
	171,589	Stewart	Dec. 28, 1875
	193,915	Birge	Aug. 7, 1877
Re.	8,287	Stevenson	Jan. 18, 1878
	208,610	Koch	Oct. 1, 1878
	215,238	Philow, et al.	May 13, 1879
	230,080	Stewart	July 13, 1880
	235,712	Stewart	Dec. 21, 1880
	235,972	Stewart	Dec. 28, 1880
	249,228	Dower	Nov. 8, 1881
	254,649	Haydrick	Mar. 7, 1882
	262,874	Williamson	Aug. 15, 1882
	263,330	Franklin	Aug. 29, 1882
	275,694	O'Hara	Apr. 10, 1883
	276,116	Williamson	Apr. 17, 1883
	310,066	McTighs, et al.	Dec. 30, 1884
	480,926	Hoadley	Aug. 16, 1892
	524,666	Cavallaro	Aug. 14, 1894
	546,258	Suverkrop	Jan. 10, 1895
	582,828	McGregor	May 18, 1897
	595,306	Jackson	Dec. 14, 1897
	642,012	Shaw	Jan. 23, 1900
	785,933	Bloom	Mar. 28, 1905
	802,880	Phillips, Jr.	Oct. 24, 1905
	976,737	Hemme	Nov. 22, 1910

[fol. 21]

1,000,583	Cooper	Aug. 15, 1911
1,021,600	Heeter	Mar. 26, 1912
1,108,313	Anderson	Aug. 25, 1914
1,456,593	Hicks, et al.	May 29, 1923
1,158,292	Rigby	Oct. 26, 1915
1,164,655	McNallen	Dec. 21, 1915
1,202,966	Carroll	Oct. 31, 1916
1,247,092	Dodds	Nov. 20, 1917
1,273,663	Pierce	July 23, 1918
1,295,134	Dodds	Feb. 25, 1919
1,300,346	Church	Apr. 15, 1919
1,319,325	Dodds	Oct. 21, 1919
1,335,880	Dodds	Apr. 6, 1920

Number	Name of Patentee	Date of Patent
1,336,537	Reinbert.....	Apr. 13, 1920
1,347,534	Cox.....	July 27, 1920
1,360,053	Stumpf.....	Nov. 23, 1920
1,363,987	Lindsay.....	Dec. 28, 1920
1,411,486	Gallagher.....	Apr. 4, 1922
1,474,630	Halliday.....	Nov. 20, 1923
1,508,771	Boynton.....	Sept. 16, 1924
1,510,669	Halliday.....	Oct. 7, 1924
1,514,585	Edwards.....	Nov. 4, 1924
1,526,104	Tuley.....	Feb. 10, 1925
1,532,623	Fitzpatrick.....	Apr. 7, 1925
1,547,240	Steele.....	July 28, 1925
1,547,461	Steele.....	July 28, 1925
1,602,864	Steele.....	Oct. 12, 1926

[fol. 22] And in addition to the above listed prior patents, defendants believe that there are many others of which they are not advised at this time, and pray leave to set same up in an amended answer at a later date when the same shall become known to defendants.

## XI

As a further, separate and special defense, defendants allege as special matter that the alleged invention attempted to be patented by said Letters Patent No. 1,930,987, was described in various printed publications prior to the supposed invention or discovery thereof by said John T. Simmons, and more than two years prior to his application for letters patent therefor, but the names of such publication or publications, and the name or names and addresses of the respective publishers are unknown to defendants at this time, and defendants pray leave to set up the same by amendment to this answer at a later date when the necessary information is obtained.

## XII

As a further, separate and special defense, defendants allege as special matter that the alleged invention attempted to be patented in Letters Patent No. 1,930,987, and all of the subject matter thereof, were known to and in open notorious public use by others than the said John T. Simmons in the United States prior to any alleged invention or discovery by the said John T. Simmons, and for more than

two years prior to the filing date of the application for said letters patent, by the following named persons:

Charles R. Edwards of Houston, Texas;

Walter C. Parks of Iowa Park, Texas;

[fol. 23] and others whose names and addresses are unknown to defendants at this time, but defendants pray leave to set the same up by an amendment to this answer at a later date when the necessary information is obtained.

### XIII

And as a further, separate and special defense, defendants allege as special matter that for the purpose of deceiving the public, the description and specification filed by said John T. Simmons in the United States Patent Office in his application which eventuated in Letters Patent No. 1,930,987, was made to contain less than the whole truth relative to his invention or discovery, or more than is necessary to produce the desired result, and further, that the said alleged invention and the said alleged letters patent here in suit is lacking in novelty and/or utility, or the quality of invention, and that said letters patent, and each of the claims thereof, are invalid in all respects.

### XIV

For a further, separate and special defense, defendants allege that plaintiffs are estopped by the proceedings in the United States Patent Office in the matter of the application for said alleged Letters Patent No. 1,930,987, and the acquiescence of the applicant for said letters patent in and to the rulings and rejections of the Commissioner of Patents in the negotiations for said letters patent and in and by the limitations imposed thereby during the negotiations in the Patent Office leading up to the alleged grant and issuance of said letters patent, and in so limiting and confining the claims of said application under the requirements of the Commissioner of Patents from asserting any such scope of invention or subject matter for said letters patent or the grant thereof as would comprehend or embrace [fol. 24] or be applicable to any device, method, process and/or apparatus made or used or sold by the defendants, or either of them, or as to the making, using or

selling of which the defendants, and/or either of them, has contributed.

## XV

For a further, separate and special defense, defendants allege that the patentee under said alleged letters patent surreptitiously and/or unjustly obtained the patent for that which was in fact the invention of others from whom he derived all of the subject matter disclosed in the alleged application upon which the said patent in suit is predicated.

## XVI

For a further, separate and special defense, defendants allege that John T. Simmons surreptitiously and unjustly made application for letters patent, which application eventuated in said alleged Letters Patent No. 1,930,987, upon an alleged invention, which application was filed as that of a sole applicant when in fact it should have been filed, if at all, as that of joint applicants,

Wherefore, these defendants deny that the plaintiffs herein are entitled to the relief prayed for in the said Bill of Complaint, or to any relief, and pray to be hence dismissed with their costs and disbursements in this cause sustained, and for such other and further relief as to the court may seem just.

Hill, Morgan & Bledsoe, by Benjamin F. Bledsoe,  
W. M. Farrer, Solicitors and Counsel for Defendants.

[fol. 25] *Duly sworn to by M. O. Johnston. Jurat omitted in printing.*

[Endorsed]: Received copy of the within Answer this 14th day of December, 1933. Lyon & Lyon, attorneys for plaintiff.

[File endorsement omitted.]

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[fol. 26] IN UNITED STATES DISTRICT COURT

ORDER GRANTING LEAVE TO AMEND ANSWER

The motion of defendants herein for leave to amend their answer came on for hearing on the 14th day of October,

1935, and the plaintiffs, through their counsel, consenting thereto,

It is Ordered, Adjudged and Decreed that defendants be permitted to amend their answer as prayed for in said motion, by filing the annexed amendments thereto.

Dated this 19th day of October, 1935.

Geo. Cosgrave, District Judge.

Approved as to form as provided in Rule 44. Leonard S. Lyon, Henry S. Richmond, Attorneys for Plaintiffs.

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[fol. 27] IN UNITED STATES DISTRICT COURT

AMENDMENT TO ANSWER—Filed October 19, 1935

Come now the defendants, Honolulu Oil Corporation, Ltd., a corporation, and M. O. Johnston Oil Field Service Corporation, a corporation, and leave of court first had and obtained, amend their answer as follows:

# I

By amending paragraph X to read as follows:

## "X"

And for a further and separate defense defendants allege that the said John T. Simmons was not the original nor first nor sole nor any inventor nor discoverer of the alleged invention alleged to be patented in and by said Letters Patent No. 1,930,987, nor any nor all of the claims thereof, nor of any material or substantial part thereof, but prior to the alleged invention thereof by the said John T. Simmons and more than two years prior to the filing of the application for said letters patent, the said alleged invention and every material and substantial part thereof had been shown, described and patented in and by each of the following Letters Patent of the United States of America, and had been invented by each of the patentees named in each of said letters patent and each of said patentees is the first and original inventor thereof, and at all times was using reasonable diligence in adapting and perfecting the same, and the respective places of residence of said paten-

tees are, as defendants are informed and believe, respectively set forth in said letters patent, to wit:

[fol. 28]

	Number	Name of Patentee	Date of Patent
	58,837	Q. Kewley	Oct. 16, 1866
	68,350	Burr & Wakelee	Sept. 3, 1867
	73,577	Carll	Jan. 21, 1868
	91,522	Collins	Jan. 22, 1869
	157,648	Stevenson	Dec. 8, 1874
	171,589	Stewart	Dec. 28, 1875
	193,915	Birge	Aug. 7, 1877
Re.	8,287	Stevenson	Jan. 18, 1878
	208,610	Koch	Oct. 1, 1878
	215,238	Philow, et al.	May 13, 1879
	230,080	Stewart	July 13, 1880
	235,712	Stewart	Dec. 21, 1880
	235,972	Stewart	Dec. 28, 1880
	249,228	Dower	Nov. 8, 1881
	254,649	Haydrick	Mar. 7, 1882
	262,874	Williamson	Aug. 15, 1882
	263,330	Franklin	Aug. 29, 1882
	275,694	O'Hara	Apr. 10, 1883
	276,116	Williamson	Apr. 17, 1883
	310,066	McTighs, et al.	Dec. 30, 1884
	480,926	Hooley	Aug. 16, 1892
	524,666	Cavallaro	Aug. 14, 1894
	546,258	Suverkrop	Jan. 10, 1895
	582,828	McGregor	May 18, 1897
	595,306	Jackson	Dec. 14, 1897
	642,012	Shaw	Jan. 23, 1900
	785,933	Bloom	Mar. 28, 1905
	802,880	Phillips, Jr.	Oct. 24, 1905
	976,737	Hemme	Nov. 22, 1910
	1,000,583	Cooper	Aug. 15, 1911

[fol. 29]

1,021,600	Heeter	Mar. 26, 1912
1,108,313	Anderson	Aug. 25, 1914
1,456,693	Hicks, et al.	May 29, 1923
1,158,292	Ribby	Oct. 26, 1915
1,164,655	McNallen	Dec. 21, 1915
1,202,966	Carroll	Oct. 31, 1916
1,247,092	Dodds	Nov. 20, 1917
1,273,663	Pierce	July 23, 1918
1,295,134	Dodds	Feb. 25, 1919
1,300,346	Church	Apr. 15, 1919
1,319,325	Dodds	Oct. 21, 1919
1,335,880	Dodds	Apr. 6, 1920
1,336,537	Rembert	Apr. 13, 1920
1,347,534	Cox	July 27, 1920

Number	Name of Patentee	Date of Patent
1,360,053	Stumpf	Nov. 23, 1920
1,363,987	Lindsay	Dec. 28, 1920
1,411,486	Gallagher	Apr. 9, 1922
1,474,630	Halliday	Nov. 20, 1923
1,508,771	Boynton	Sept. 16, 1924
1,510,669	Halliday	Oct. 7, 1924
1,514,585	Edwards	Nov. 4, 1924
1,526,104	Tuley	Feb. 10, 1925
1,532,623	Fitzpatrick	Apr. 7, 1925
1,547,240	Steele	July 28, 1925
1,547,461	Steele	July 28, 1925
1,602,864	Steele	Oct. 12, 1926
182,098	Birge	Sept. 12, 1876

[fol. 30]

## II

By amending paragraph XI to read as follows:

## "XI

As a further, separate and special defense, defendants allege as a special matter that the alleged invention attempted to be patented by said Letters Patent No. 1930987 was described in various printed publications prior to the supposed invention or discovery thereof by said John T. Simmons and more than two years prior to his application for letters patent therefor, which said printed publications are as follows:

Fifth Annual Report of the United States Geological Survey to the Secretary of the Interior, 1883-'84, by J. W. Powell, Director, printed in 1885 by the United States Government Printing Office and in particular pages 157-162 inclusive thereof.

Second Geological Survey of Pennsylvania: 1875 to 1879 Report III by John F. Carll published at Harrisburg, Pennsylvania in the year 1880 by the Board of Commissioners for the Second Geological Survey of the State of Pennsylvania, including the oil region maps and charts for said Report III, particular reference being made to pages 192-193 inclusive, 232 to 233 inclusive, 263 to 265 inclusive, 294, 311 to 324 inclusive.

Plate XXXIX appearing between pages 296 and 297 of said volume or report and plates XIV and XIV bis appearing in the Oil Region Maps and Charts for said volume or report.

Second Geological Survey of Pennsylvania, Report II by John F. Carll published in the year 1877 at Harrisburg,

Pennsylvania, by the Board of Commissioners for the [fol. 31] Second Geological Survey of the State of Pennsylvania and in particular pages 126 to 131 inclusive and pages 196 to 197 inclusive.

Production, Technology and uses of Petroleum and its Products by S. F. Peckham found in report of Census Office, Department of the Interior, Mis. Doc. 42, Part 10 of House of Representatives, Forty-Seventh Congress, Second Session, which was published in 1884 by the United States Government Printing Office, and in particular pages 6 and 7, 12, 87 to 91 inclusive, and plates and diagrams referred to therein."

### III

By amending paragraph XII of their answer to read as follows:

### "XII

As a further, separate and special defense, defendants are informed and believe and therefore allege as a special matter that the alleged invention attempted to be patented in Letters Patent No. 1930987 and all of the subject matter thereof, were known to and in open, notorious use by others than the said John T. Simmons in the United States prior to the said alleged invention or discovery by said John P. Simmons, and for more than two years prior to the filing date of the application for said Letters Patent by the following named persons:

Charles R. Edwards, of Houston, Texas. That said Charles R. Edwards used said device at Humble, Texas, in the winter of 1919-'20

Walter C. Parks, of El Dorado, Arkansas. That said Walter C. Parks used the alleged invention in the year 1919 in a well located north of the K. M. A. oil field near the town of Iowa Park, Texas.

[fol. 32] E. H. Cox of Ada, Oklahoma. That said E. H. Cox used the alleged invention in the year 1921 on a well being drilled for the Home Drilling Company at or near the Town of Duncan, Oklahoma."

Dated October 3, 1935.

Miller & Boyken, Hill, Morgan & Bledsoe, by Kenneth K. Wright, Attorneys for Defendants.

[File endorsement omitted.]

*Duly sworn to by M. O. Johnston. Jurat omitted in printing.*

MEMORANDUM OF DECISION—Filed July 28, 1936

COSGRAVE, District Judge:

The patent in suit No. 1,930,987, granted to John T. Simons, is for method and apparatus for testing the productivity of formations encountered in drilling oil wells and other deep wells. The method consists briefly in sealing off the formation or stratum to be tested from the strata above it by means of a packer, thus separating the two zones and relieving this stratum to be tested from the hydrostatic pressure of the rotary mud above it, and thus allowing the cognate fluids of the stratum to be tested to flow freely into the bore below point where the sealing off is effected and into the empty pipe carrying the packer which is controlled as to opening and closing by valves operated by movement of the pipe, entrapping the sample thus produced, and removing it from the well unmixed with rotary mud or other contents of the drill hole. The zone to be tested is that exposed in the "rat-hole", or a bore of reduced diameter which in oil well drilling regularly precedes the making of the full bore of the drill hole obtained when the rat-hole is reamed out.

The apparatus claims describe a packer surmounting the drill pipe, which, when pressed against the walls of the hole immediately above the stratum to be tested and when resting on the shoulder created by the diminished diameter of the rat-hole, effectually seals the rat-hole from the well above. A pipe conduit leading from the rat-hole through the packer into the empty drill pipe above is provided and is furnished with a valve which is opened by movement of the drill pipe and, after the contents of the rat hole, [fol. 34] or sufficient quantity of the same, has flowed into the empty drill pipe, the valve is closed by a reverse movement of the drill pipe, and the then entrapped sample is taken to the surface.

It seems to me that the Franklin patent No. 263,330 anticipates both this method and device. It is true that the Franklin patent exhibits a device for control and regulation of the flow of oil wells and does not include the taking of a sample, thus necessarily implying a flowing well. The Franklin device is to be connected with the tubing of the well, is provided with a valve which is opened and closed

by turning the tubing part way around from the surface. The tubing is kept closed while the device is being put into the well, opened after it is in the well, and closed while it is being drawn out. Plaintiff urges that keeping it closed while it is being drawn out cannot be accomplished due to the imperfect action of the valve described, but this even if true, is an unimportant feature. For the function claimed for the valve is a complete closure of the pipe while it is being withdrawn from the well. It is plain that although not the claimed object of the invention, a sample may be thus taken out of the well uncontaminated by the contents of the hole above. The use of a packer substantially as the same exists today is necessarily implied from the language of the patent. I am convinced of this both from the contemporarily literature on the subject descriptive of the state of the art and from the necessary implications of the patent itself. Without the use of a packer substantially as used today the device could not perform the function attributed to it. The inventor says: "When the tubing is put into the well or withdrawn from it it is desirable that no flow take place through it." If no packer is contemplated there [fol. 35] would be no object in "closing the tube for the purpose of allowing the gas to obtain a head." The Franklin patent may not be a tester, but very plainly it can be used as such; for by its use the contents of the producing stratum, sealed off from the remainder of the well unimpeded in its entry into the rat-hole by the pressure of the rotary mud, can be brought undiluted to the surface by a mechanism almost duplicating that shown in the patent in suit.

Judge Hutcheson, then of the Eastern District of Texas, said of the Franklin patent in *Edwards v. Johnston Formation Testing Corp.*, 44 Fed. (2d) 607:

"This device, though designed for and used, not for the purpose of testing strata, but to regulate and control the flow of oil wells, had in it practically every suggestion of plaintiff's, and witnesses testified, and I think established, that it could have been taken as it was or with mere mechanical adaptation and actually used in a rotary well as a tester." (612.)

The testimony at the trial showed that a device made in accordance with the teachings of the Franklin patent had, but recently theretofore, been actually used for the

purpose of making a test of a water shut-off. The same device would produce a production test.

It was admitted at the trial that a packer to separate one stratum of the oil well from another is old in the art. The Edwards patent, No. 1,514,585, antedating plaintiff's application, substantially discloses the method and the device of plaintiff. The same is true of Cox, No. 1,347,534. The description of the Edwards device in the case referred to quoted by Judge Hutcheson from the argument of the plaintiff in that action might properly be used to describe that of the plaintiff in the case at bar.

[fol. 36] The object of these patents was precisely that of the patent in suit, that is to ascertain what the stratum that was being drilled was producing. The difficulties presented were the same. To make a test the inventors first proceed to separate the stratum to be tested from the bore above it. The separation is accomplished by the use of a packer. Communication between the stratum to be tested and the surface is obtained by means of an empty pipe with controlled valves. They then bring the product of the stratum to be tested to the surface for examination, entirely separated from the rotary mud or other contents of the bore above. Progressively the difficulties of the problem increased. The introduction of the rotary drilling system and use of drilling mud; the excessive depths of wells resulting in enormous pressure upon the machinery from the mud column, as well as from the formation; all these presented serious difficulties. It seems to me, however, that except as modified by the necessity of overcoming such difficulties the nature of the testing devices has been the same from the beginning.

The views here expressed are in substantial accord with the decision of the Fifth Circuit, on the appeal of Edwards v. Johnston Formation Testing Corporation, *supra*, and reported in 56 Fed. (2d) 49. That Circuit Court, speaking of the Edwards and Johnston patents, the latter being the device charged with the infringement here, says:

"From this outline of the prior art, and the Edwards and Johnston patents, we think it clear that neither patent is a basic or pioneer patent, but that each is for an improvement only; each making a patentable advance over the prior art but a step rather than a leap."

Edwards v. Johnston Formation Testing Corp., 56 Fed. (2d) 49. (56.)

The same views sufficiently explain my reasons for not following the decision of Judge Bryant, of the Eastern District of Texas, who found the Simmons patent valid and infringed by the Johnston device.

It further fairly appears that the patent in suit was in itself an impractical device. No actual commercial use has been shown. The inventor had within a month after the patent was taken over by the present owner was employed to devise improvements in the valve structure. This without doubt was due to the difficulty in operating the device at increased depths.

From the foregoing I am compelled to the belief that the Simmons patent, if valid at all, must be restricted to its precise form. The method claims, eight and eighteen, are rejected. Defendant's device, differing in operation in important respects, does not infringe.

Having expressed my views on the controlling issue with such brevity as the case permits there is no necessity for discussing the other questions presented.

Counsel for defendant will propose findings and decree in accordance herewith.

July 28, 1936.

[File endorsement omitted.]

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[fol. 38] IN UNITED STATES DISTRICT COURT

FINDINGS OF FACT AND CONCLUSIONS OF LAW.—Filed  
October 23, 1936

This cause having come on regularly to be heard upon the pleadings and proof, the parties being represented by counsel, and the same having been tried, argued and submitted, upon consideration thereof, the Court now makes and files the following findings of fact:

Findings of Fact

1. That plaintiff Erle P. Halliburton is an inhabitant of the State of California and resides at Los Angeles therein, and plaintiff Halliburton Oil Well Cementing Company is a corporation organized and existing under the laws of the State of Delaware.

2. That defendant Honolulu Oil Corporation, Ltd., is a corporation organized and existing under the laws of the State of Delaware, and defendant M. O. Johnston Oil Field Service Corporation is a corporation organized and existing under the laws of the State of California, and each of said defendants maintains a regular and established place of business within the Southern District of California.

3. That on October 17, 1933, there was issued to plaintiff Erle P. Halliburton, assignee, on an application filed by John T. Simmons on February 10, 1926, Letters Patent of the United States No. 1,930,987 for method and apparatus for testing the productivity of formations encountered in [fol. 39] wells, and the said plaintiff has remained and now is the sole owner of said Letters Patent, and the plaintiff Halliburton Oil Well Cementing Company, by virtue of a certain license given and granted by said Erle P. Halliburton has been at all times since the issuance of said Letters Patent and now is the owner of the sole and exclusive license and liberty in and to any and all rights in and under the said Letters Patent, for the full term thereof and throughout the territory of the United States of America.

4. That subsequent to the grant of said Letters Patent, within the Southern District of California and elsewhere within the United States, the defendant M. O. Johnston Oil Field Service Corporation has manufactured and used apparatus in testing the productivity of formations encountered in oil wells, which manufacture and use are by plaintiffs alleged to infringe the said Letters Patent and the rights of the plaintiffs therein and thereunder.

5. That no apparatus manufactured by defendant M. O. Johnston Oil Field Service Corporation and no apparatus or method used by the defendants, or either of them, infringes the said Letters Patent No. 1,930,987, or any of the claims thereof, or any right of the plaintiffs or either of them therein or thereunder.

6. That Franklin Patent No. 263,330, dated August 29, 1882, anticipates both the method and apparatus disclosed and claimed in the patent here in suit.

7. That by using the device disclosed in said Franklin patent, a sample may be taken out of the well uncontaminated by the contents of the hole above.

[fol. 40] 8. That the use of a packer, substantially as the same exists today, is necessarily implied from the language of such Franklin patent. This is also apparent from the contemporary literature on the subject descriptive of the state of the art. Without the use of a packer substantially as used today the Franklin device could not perform the functions attributed to it.

9. That the device disclosed in said Franklin patent very plainly can be used as a tester; for by its use the contents of the producing stratum, sealed off from the remainder of the well, unimpeded in its entry into the rat hole by pressure of the rotary mud, can be brought undiluted to the surface by a mechanism almost duplicating that shown in the patent in suit.

10. That a device made in accordance with the teachings of said Franklin patent actually has recently been used for the purpose of successfully making a water shut-off test and the same device would also successfully make a production test.

11. That a packer to separate one stratum of the oil well from another is old in the art.

12. That Edwards Patent No. 1,514,585, dated November 4, 1924, substantially discloses the method and device disclosed and claimed in the patent in suit.

13. That Cox Patent No. 1,347,534, dated July 27, 1920, also substantially discloses the method and device disclosed and claimed in the patent in suit.

[fol. 41] 14. That the object of said Edwards and Cox patents was to ascertain what the stratum that was being drilled was producing, such object being precisely that of the patent in suit.

15. That the nature of the testing devices and methods of use disclosed in said Edwards and Cox patents, except as modified by the necessity of overcoming later difficulties, are the same as those disclosed and claimed in the patent in suit.

16. That there was no actual commercial use of the device disclosed and claimed in the Simmons patent in suit. Such device was impractical and the inventor himself, within a

month after the patent was taken over by the present owners, was employed to devise improvements in the valve structure of such device, due to the difficulty in operating it at increased depths.

17. That the Simmons patent in suit, if valid at all, must be restricted to its precise form.

18. That the two method claims in the patent in suit, namely claims 8 and 18, are invalid, for want of invention.

19. That the oil well testing devices manufactured or used by defendant M. O. Johnston Oil Field Service Corporation, differ in operation in important respects from the device disclosed and claimed in said Simmons patent, and such Johnston devices are not infringements of any of the Simmons patent claims here in suit.

From the foregoing findings of fact the Court now makes separately the follow-

[fol. 42]

#### Conclusions of Law

1. That this is a suit in equity arising under the patent laws of the United States, and this Court has jurisdiction of the subject matter thereof and of the parties thereto.

2. That neither of the plaintiffs is entitled to the relief prayed in their bill of complaint or to any relief whatsoever against the defendants or either of them.

3. That the patent in suit, and particularly claims 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18 and 19 thereof, is invalid.

4. That neither of the defendants has infringed said patent.

5. That the bill of complaint should be dismissed.

6. That the defendants should have and recover of and from the plaintiffs and each and both of them their costs herein to be taxed.

Dated Oct. 23, 1936.

Geo. Cosgrave, U. S. District Judge.

[File endorsement omitted.]

[fol. 43] IN UNITED STATES DISTRICT COURT FOR THE SOUTH-  
ERN DISTRICT OF CALIFORNIA, NORTHERN DIVISION

In Equity. No. D-56

ERLE P. HALLIBURTON and HALLIBURTON OIL WELL CEMENT-  
ING COMPANY, a Corporation, Plaintiffs,

vs.

HONOLULU OIL CORPORATION, LTD., a Corporation, and M. O.  
JOHNSTON OIL FIELD SERVICE CORPORATION, a Corporation,  
Defendants

FINAL DECREE—Filed October 23, 1936

This cause came on to be heard at this term, and was argued by counsel; and thereupon, upon consideration thereof, the Court having filed its memorandum of decision, it is:

Ordered, Adjudged and Decreed that Simmons patent No. 1,930,987, dated October 17, 1933, herein suit, and particularly claims 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18 and 19 thereof, is invalid for want of invention, that defendants, and each of them, have not infringed said claims of said patent, or any of them; and that the bill of complaint be and the same is hereby dismissed, with costs to defendants taxed in the sum of \$644.95.

Dated Oct. 23, 1936.

Geo. Cosgrave, U. S. District Judge.

Decree entered and recorded Oct. 23, 1936.

R. S. Zimmerman, Clerk, by Francis E. Cross, Deputy Clerk.

[File endorsement omitted.]

[fol. 44] IN UNITED STATES DISTRICT COURT

NOTICE OF LODGMENT OF NARRATIVE STATEMENT OF EVIDENCE  
—Filed February 3, 1937

To Defendants, Honolulu Oil Corporation, Ltd., a Corporation, and M. O. Johnston Oil Field Service Corporation, a Corporation, and to Hill, Morgan & Bledsoe and W. A. Boyken, their Attorneys:

You, and Each of You, will please take notice that plaintiffs have this 3rd day of February, 1937, lodged with the

Clerk of this Court the Condensed Statement of Evidence to be included in the record on appeal to the Circuit Court of Appeals for the Ninth Circuit.

Notice is Further Given that plaintiffs will ask the Court to approve such Narrative Statement of Evidence on the 15th day of February, 1937, at the hour of ten o'clock A. M., or as soon thereafter as counsel can be heard, at the courtroom of said court.

Dated this 3rd day of February, 1937.

Lyon & Lyon, Leonard S. Lyon, Richard F. Lyon,  
Henry S. Richmond, Attorneys for Plaintiffs.

[Endorsed]: Due service and receipt of a copy of the within is hereby admitted this 3rd day of February, 1937. W. A. Boyken, Hill, Morgan & Bledsoe, atty. for defendants.

[File endorsement omitted.]

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[fol. 45] IN UNITED STATES DISTRICT COURT

**Narrative Statement of Evidence—Filed March 4, 1937**

Be it remembered, that on the 11th day of November, 1935, the above entitled and numbered cause came on for trial before the Honorable George Cosgrave, United States District Judge for the Southern District of California, Northern Division, at Fresno, in said district, whereupon the following proceedings were had and taken, to wit:

**APPEARANCES**

Lyon & Lyon, Leonard S. Lyon, and Henry S. Richmond, all of Los Angeles, California, and Ben F. Saye, of Duncan, Oklahoma, Attorneys for Plaintiffs,

Hill, Morgan & Bledsoe, Vincent Morgan, W. M. Farrer, and Kenneth K. Wright, all of Los Angeles, and A. W. Boyken, of San Francisco, California, Attorneys for Defendants.

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**STATEMENT AS TO SUIT**

Before the introduction of evidence was begun, plaintiffs' counsel stated, in response to the Court's question, that

plaintiffs would rely upon and seek recovery upon claims 8 to 19, inclusive, of the patent in suit.

Plaintiffs then offered a certified copy of Letters Patent to Simmons No. 1,930,987, granted October 17, 1933, and the same was received in evidence as Plaintiffs' Exhibit 1.

(Book of Exhibits, p. 1.)

[fol. 46] Plaintiffs offered certified copy of the file wrapper and contents of the patent in suit No. 1,930,987, and the same was received in evidence as Plaintiffs' Exhibit 2.

(Book of Exhibits, p. 10.)

#### STIPULATION AS TO CERTAIN FACTS

Defendants then stipulated that, as alleged in plaintiffs' bill of complaint, plaintiff Erle P. Halliburton is the owner of said letters patent in suit, and that plaintiff Halliburton Oil Well Cementing Company is a corporation, and is the exclusive licensee under said patent, and that the plaintiffs were entitled to sue and recover for infringement of said letters patent.

Plaintiffs offered certified copy of the decision of the Board of Appeals of the U. S. Patent Office in Interference No. 59,515, and the same was received in evidence as Plaintiffs' Exhibit 3.

(Book of Exhibits, p. 145.)

Mr. L. S. Lyon: As Plaintiffs' Exhibits Nos. 4-A and 4-B, respectively, I offer in evidence certified records of the Patent Office in Interferences Nos. 55,940 and 55,941, respectively, which contain the record of the attempt by Johnston to contest this Simmons patent, the contest on the patentability, showing that Johnston could not win on priority, and the decision of the law examiner holding that the invention was patentable and overruling Johnston's motion attacking the patentability.

"Mr. Boyken: That is not the Johnston who is a defendant in this case, your Honor.

[fol. 47] Mr. L. S. Lyon: The defendant's affidavit here states that this defendant is a licensee of that defendant."

The Court: Very well.

(Book of Exhibits, p. 183 and p. 204.)

Mr. L. S. Lyon: At this time I would like to offer in evidence, or lodge as an exhibit in this case, within your Honor's ruling or indication a few moments ago, a certified copy of the record made at the trial in the Texas case, which is entitled "Erle P. Halliburton and Halliburton Oil Well Cementing Company, a corporation, Plaintiff, vs. Johnston Formation Testing Corporation, a corporation, and E. C. Johnston, In Equity No. 693, In the District Court for the Eastern District of Texas, Tyler Division." I am not offering this as testimony in this case in the sense that we take the testimony of witnesses here. This is merely made a part of the record in this case so that your Honor can compare what was before the court there with what is before you here in determining how far you will be guided, if at all, by what was decided in Texas.

Mr. Boyken: We interpose the same objection, your Honor, that we are in no way bound by this decision that was rendered by the Texas court. And we believe that the record in the Texas court has no place in this court here because we expect to introduce additional defenses that were not in that Texas case. As your Honor indicated before, if you care to examine this record perhaps at the conclusion of this trial, why, of course, that would be up to your Honor to decide but I don't think it is a proper exhibit in this case especially at the present time. And I object to it on that ground.

[fol. 48] The Court: The objection to that will be sustained. My present impression is that is not the ordinary procedure. I will advise myself with respect to it and you may renew it some time later but for the present I will decline to receive it.

Mr. L. S. Lyon: And may I have an exception?

The Court: Yes.

Mr. L. S. Lyon: I might state, your Honor, in numerous patent cases in our own District similar questions have arisen, where records have been presented in other cases, and the same argument has eventually resulted in the record being received. In the Neon Light cases that were tried here eastern decisions and records were received. I am not offering them in any way that will conflict with anything that Mr. Boyken is objecting to.

The Court: Your position, it seems to me, would be about like this, that after the evidence in this case is in that record might show the same thing was testified to in the

other case and that here is what the judge said about it. That is about the situation. Whether that is admissible for the purpose that you state I confess I am not advised. I don't care to receive it until I have given the matter some little investigation.

Mr. L. S. Lyon: We will ask that it be marked Exhibit 5 for Identification, your Honor.

The Court: Yes.

The Clerk: Plaintiffs' Exhibit No. 5 for Identification.

(Not printed, but is sent up as a physical exhibit.)

[fol. 49] The Court: You have your exception to the rejection of the offer.

Mr. L. S. Lyon: Yes, your Honor. I will also offer in evidence, as Plaintiffs' Exhibit No. 6, a certified copy of an interlocutory decree in the Texas case, which certified copy is annexed to the plaintiffs' application for a temporary injunction in this case.

And, as Plaintiffs' Exhibit No. 7, I will offer a certified copy of the findings of fact in that case, which certified copy is also annexed to the plaintiffs' motion for an injunction in this case.

I assume that those will both be subject to the same ruling and exception.

The Court: Yes. Let them be marked for identification.

The Clerk: Plaintiffs' Exhibit No. 6 is the interlocutory decree and Plaintiffs' Exhibit No. 7 is the findings, both for Identification.

(Book of Exhibits, p. 215.)

Mr. L. S. Lyon: Without prejudice to Mr. Boyken's objection or our exception and merely to save time, I will ask if he is willing to stipulate that the device found to infringe in the Texas case and the method found of using that device, there found to be an infringement, is the same device and the same method employed by the defendants here, and that the defendants' answers to interrogatories [fol. 50] in that case and in this case are identical, accompanied by the same illustrations.

Mr. Boyken: I am unable to stipulate to that, your Honor, as much as I would like to. I wasn't in the Texas case.

The Court: Very well. That is settled. You are not able to stipulate to it.

Mr. L. S. Lyon: Then, as Plaintiffs' Exhibit No. 8, I will offer in evidence a certified copy of the interrogatories propounded in the Texas case to the defendants and the answers thereto, together with the exhibits accompanying those answers, which I assume will be subject to the same ruling and exception, your Honor.

The Court: Yes. They will take the same course.

The Clerk: Your Honor, is that in evidence or for identification?

The Court: You didn't object to it. I am simply assuming you will object.

Mr. Boyken: Mr. Lyon, I understood, said that he understood this would be subject to the same ruling.

Mr. L. S. Lyon: Yes.

The Court: Very well. It will take the same course as the preceding offer.

The Clerk: Plaintiffs' Exhibit No. 8 for identification.

Mr. L. S. Lyon: All of Exhibits 5, 6, 7, and 8, as I understand it, are for identification at this time, as ruled by the court.

[fol. 51] (Testimony of Erle P. Halliburton)

ERLE P. HALLIBURTON, one of the plaintiffs, called as a witness on behalf of the plaintiffs, testified as follows:

My name is Erle P. Halliburton. I reside at 19 Berkeley Square, Los Angeles, California. I am 43 years of age. I am one of the plaintiffs in this case and am president and general manager of the Halliburton Oil Well Cementing Company, the other plaintiff herein. The character of the business engaged in by the Halliburton Oil Well Cementing Company is rendering an oil field service, cementing oil wells, testing oil wells, manufacturing and selling oil field supplies, and acidizing oil wells. The principal place of business of that company is located at Duncan, Oklahoma. Halliburton Oil Well Cementing Company operates throughout the states of West Virginia, Pennsylvania, New York, Michigan, Kansas, Oklahoma, Arkansas, Louisiana, Texas, New Mexico, Colorado, Wyoming, Montana, California, and Canada. The company has places of business and facilities to service wells drilled in each of those different states.

I entered the oil well cementing business in 1917. Prior to that time I had been engaged in various mechanical

capacities and had served an apprenticeship in marine steam engineering in the U. S. Navy. My first experience in the oil fields, I think, was in December, 1916, and ever since that time I have been in oil field work. I started out at Taft, Kern County, California, working for the Perkins Oil Well Cementing Company, and was with that company about two years. I then went to Burkburnett, Texas and from there to Oklahoma, where I started in the well cementing business for myself. I continued to [fol. 52] operate the oil well cementing business as an individual until the plaintiff, Halliburton Oil Well Cementing Company was organized under the laws of the State of Delaware on July 1, 1924. Ever since July, 1924, plaintiff Halliburton Oil Well Cementing Company has been continuously engaged in the oil well cementing business. I have been president of the plaintiff Halliburton Oil Well Cementing Company continuously since its organization.

"Mr. Boyken: If your Honor please, I want to object to that. I understand that Mr. Halliburton is being qualified now as an expert witness. He is the plaintiff in the case and I object to him testifying as an expert witness when he is the plaintiff in the case. I don't, of course, object to Mr. Halliburton giving any fact testimony but I do think that he should not be qualified nor be permitted to testify in this court as an expert and give matters of opinion."

The Court: The objection is overruled, on the grounds stated. I know of no decision against it and no rule. There is no legal obstacle that I know of to the receipt of the testimony of an interested party on expert questions.

Mr. Boyken: An exception.

Aside from the particular patent here in suit, concerning the court experience that I have had with regard to patents and their interpretation and construction, I wish to state that I have been continuously involved in patent litigation, since around 1920; some 15 years. I have, myself, filed, or had filed, numerous patent applications in the United States Patent Office on inventions which I, myself, have invented. I am familiar with the methods of applying prior art to in- [fol. 53] ventions. I am familiar with the reading of patents and patent drawings and I understand drawings and speci-

fications and claims of patents. I have had granted to me several patents, some quite valuable, in connection with the cementing and drilling of oil wells and a method of automatically feeding a bit to its work in drilling and several methods of cementing oil wells. I have testified in other patent cases. I have testified before the late Judge Trippet, Judge Bledsoe, the late Judge Cotteral of the Western District of Oklahoma, Judge Bryant of the Eastern District of Texas, and Judge McCormick of this court. In addition to being able to make the paper comparisons to which I have referred, I wish to state that I have had actual experience with testing devices in the oil fields in testing wells, and I am thoroughly familiar with the mechanics of the testing devices here involved in this case.

The Halliburton Company has two types of testing devices and all of the accessories that go along with them to make it possible to test wells where the hole is drilled of different sizes, and we have men who are experienced in the operation of the testing device, who deliver the testing device to the well and who assist in making a test where their services are required. And then, after the test, they return the testing device to the field service station and there the device is taken apart and repaired, if any repairs are needed, and cleaned up for the next job. The men employed usually had years of experience in the drilling of oil wells and were familiar with the operation of the device. Halliburton Oil Well Cementing Company has special men for testing in Texas, Louisiana, Arkansas, Oklahoma, New Mexico and California, consisting of about 30 or 35 field [fol. 54] service men. In addition to that, there are other men who look out for the equipment and serve in other capacities. Then we have in districts where the drilling is not so active oil well cementers who are also qualified as testers and test the wells.

Plaintiffs' Exhibits 5 and 19 in the Texas case, which you show me, are two forms of testers that are used by the plaintiff Halliburton Oil Well Cementing Company in testing oil wells.

In February, 1926, I was in Oklahoma. My brother, who was superintendent for the Halliburton Oil Well Cementing Company in Eldorado, Arkansas, advised me that there was an invention in Eldorado that I should come on to see. I went to Eldorado, Arkansas, and

arrived there on the 13th day of February, late in the afternoon. My brother met me and we went into the lobby of the hotel, and John T. Simmons had on display in the lobby of the hotel a testing device. The gentleman here in the court room who has just stood up is the John T. Simmons to whom I refer. I had first met Mr. Simmons in Tonkawa, Oklahoma, in 1923. I knew him as a driller through the oil fields and a person who had invented a tool for pulling casing; I knew him more as an expert driller than anything else. Mr. Simmons had on display in the lobby of the hotel a testing device, a single string testing device carrying a packer and a valve, with the valve so constructed that it could be opened and closed by movement of the pipe. The particular device which I saw being demonstrated by Mr. Simmons in the hotel in February, 1926, is here now in the court room. It is the same device that I identified before Judge Bryant in the Texas case.

[fol. 55] Mr. L. S. Lyon: We will offer this device, which has just been identified by the witness, as Plaintiffs' Exhibit No. 9.

The Court: It will be admitted.

By Mr. L. S. Lyon:

Q. Will you step down to Exhibit 9 and demonstrate with it and explain with it to the Court what the device is and how it was to operate, as explained by Mr. Simmons to you in February, 1926, at that first meeting in the hotel?

A. The device carries a packer below an adjacent body part. The body part has two holes drilled through it communicating with the inside of the mandrel on which the packer is fitted. The body part has a pin that is threaded and that receives two adjusting nuts. Then there is an upper body part that has two holes drilled through it in such a manner that when the upper body part is turned in one direction the holes in the upper body part are aligned with the holes in the lower body part that communicates with the mandrel, the inside of the mandrel on which the packer is fitted. The upper body part is threaded to receive a drill pipe and the holes through the upper body part communicate with the inside of the pipe. The two body parts are ground in such a manner that they fit together so that fluid will not leak when the adjusting nuts have been

properly drawn up and the proper lubricant has been used between the working part of the upper and the lower body parts.

Q. I hand you a small metal model. Is that a correct representation of Exhibit No. 9 drawn to scale?

A. Yes.

[fol. 56] Q. Can you take this model apart and show the Court the interior construction of Exhibit 9 that you have been describing?

A. Yes.

(Plaintiffs offered the small model of Exhibit No. 9, and the same was admitted in evidence as Plaintiffs' Exhibit 10.)

The Witness: My understanding is that Exhibit 9 and the patent drawing were made from the same drawing, made by the Eby Engineering Company, and that Exhibit 10 was made from the patent drawing, one of those drawings; at any rate it is substantially the same thing, only just reduced in size.

By Mr. L. S. Lyon:

Q. Mr. Halliburton, will you please step down to Exhibit No. 9 and take the exhibit apart and explain to the Court how it is constructed and how it operates?

A. I will, first, remove the locking nuts in order that the top body piece can be removed from the pin of the lower body piece, in other words, the pin that holds the device together. With the top body piece removed it will be noted that there is a slot cut in the radius of the top body piece, so arranged that a pin in the lower body piece can engage this slot and limit the rotation of the top body piece relative to the lower body piece. In other words, this pin and slot limit the movement of the top body piece so that when the top body piece is turned as far as it can be turned in one direction the holes on this won't align, closing the valve, and when the top body piece is turned as far as it can be turned in the opposite direction [fol. 57] the holes in the top body piece and the lower body piece are aligned, opening the valve so that any fluid entering the intake or collar below the packer can pass up through the valve and into the pipe which is attached to the top body piece by means of drill pipe threads.

Q. How does this device, Exhibit No. 9, compare with the device shown in the drawings of the patent in suit?

A. It is almost identical with the exception that we do not have the perforated pipe that screws onto the collar below the packer.

Q. That is No. 12 in the drawing?

A. No. 12. And No. 13 is not present with the device which is shown in the drawing but that perforated pipe varies in length, depending on the depth of the "rat-hole," and also in the size of the perforations, depending on the condition of the formation being tested.

Q. When you first observed this device being demonstrated by Mr. Simmons in the hotel in February, 1926, was it accompanied by such a piece of perforated pipe and plug?

A. Yes.

Q. Do you know what has become of the original plug and piece of pipe?

A. No.

Q. When this device is assembled and operated in a well how do you lower it into the well? By what means?

A. You lower it into the well by means of the drill pipe. In other words, it is attached to the drill pipe the same as you would attach a bit or a drill collar to the pipe.

Q. That is, to the end of the pipe?

A. It is to the lower end of the pipe.

[fol. 58] Q. What constitutes the lower end of this device?

A. The lower end of the device would be the intake, perforated nipple and mandrel. That is the portion below the valve and the packer.

Q. Just point to which is the lower end of this.

A. This is the lower end and that has the collar on it, a pipe collar.

Q. How do you attach the device to the pipe, by what part?

A. By the top body part, which is screwed onto the pipe.

Q. What part of this device constitutes the packer?

A. The packer is this cone-shaped rubber member that is just below the lower body part of the device.

Q. Is that any particular type of packer?

A. Well, that is a solid rubber packer. In experience we have found that fabricated cotton and rubber make a more substantial packer than the solid rubber.

Q. Is the word "packer" in the oil field art limited in meaning to a cone-shaped device like that on Exhibit 9?

A. No. There are many, many kinds of packers used in the oil industry.

Q. And this is one particular kind?

A. This is one particular kind.

Q. How is the packer positively pressed against the walls of the formation when the device is operating?

A. In drilling a well it is customary to drill a small hole ahead of the regular sized hole in which the casing is to be set, for the purpose of exploring with this pilot hole, called a "rat-hole," the formations below there, coring and catching the cuttings. Then when this testing device is set into the well this cone-shaped packer sets on the shoulder that is created by the difference in the size of the "rat-[fol. 59] hole" and the regular sized hole that is drilled to receive the casing.

Q. In other words, you lower the pipe down until this packer strikes that shoulder?

A. And engages the formation there.

Q. What is accomplished by doing that?

A. That seals off the drilling fluid in the annular space between the casing and the wall of the earth bore hole.

Q. What is the purpose of doing that?

A. To take the pressure off of the formation. You see, in drilling an oil well with the rotary method of drilling the weight of the mud fluid, the specific gravity of it, must be such as to create a hydrostatic pressure that will exceed the expelling force or expelling pressure of any fluid contained in porous formations encountered in drilling. In other words, if the pressure within the bore hole, that is, the hydrostatic pressure, was less than what we call the rock pressure or the native pressure of the cognate fluid, then the cognate fluid would force the mud fluid or drilling fluid from the well and cause the well to blow out. So by sealing off the mud fluid from above the formation by means of the packer, and if the valve in the testing apparatus has been closed as the testing apparatus is lowered into the well, then when the valve is opened the pressure of the cognate fluid in the formation is opened up to atmospheric pressure through the pipe, which is empty, and therefore it flows into the pipe, up through the valve.

Q. If you are going to take a test of a formation without bailing or removing the mud fluid from the well is it neces-

sary to seal off or pack off the tester so as to relieve the [fol. 60] formation of the weight of the pressure of the mud fluid?

A. It is necessary to maintain mud fluid in any open hole. To remove the mud fluid would cause all of the different formations drilled through to slough off, and those formations that would make water, oil or gas would come into the well and would destroy it, unless you maintained a mud fluid in the annular space back of the pipe. Unless you had some pipe in there you couldn't remove the mud fluid from the well.

Q. You have given the reason for having the mud fluid in the well. If you are going to make a test without taking that mud fluid out of the well is it necessary to separate or pack off the well in order that the weight of that fluid will not be operative on the formation that you are testing?

A. Yes. It is necessary, to get a productivity test, to seal off the hydrostatic pressure of the mud fluid from the formation. You see, a lot of times testing is confused with samples taken, such as a sample of the formation, in other words, that you take for geological reasons. This device is for the purpose of making a productivity test of the cognate fluid itself and not of the formation in which the cognate fluid is contained.

Q. You have used that term "cognate fluid." What do you mean by that?

A. That is any fluid that is placed in a formation by nature, such as oil, water or gas.

Q. What parts of this device constitute the valve?

A. The parts of the device that constitute the valve are the upper and lower body parts, with the holes drilled through them so that they are aligned and misaligned when [fol. 61] the upper body parts are turned by movement of the pipe.

Q. Can you tell us whether or not that particular type of valve in Exhibit 9 is an unusual type or is a common type in mechanics?

A. Well, of course, almost all positively controlled valves consist of opening and closing ports, but, of course, for an exact valve, this is constructed purposely and in accordance with well designed principles of valve structure as a valve for a testing device.

Q. When you saw this device for the first time—

The Court: You had better not put that back together. I want to ask you some questions about that.

Mr. L. S. Lyon: Well, perhaps this would be a good time to do it.

The Court: Show me the valve.

A. Here is the hole in the lower body part, drilled at an angle, and here is a hole in the upper body part that comes through here.

The Court: The holes in the lower body part are continuations of the holes in the upper body part?

A. When the upper body part is turned in one direction they are, and when the upper body part is turned in the other direction, they are misaligned, and therefore no fluid can pass through the holes.

The Court: Show me the top opening of the holes.

A. The top opening of the holes is these two holes here out near the threads.

The Court: Does the fluid that you test go through those holes?

A. Yes, sir. It comes out through those holes.

[fol. 62] The Court: Where is the lower end of the hole?

A. The holes terminate into the mandrel on which this packer—

The Court: Well, you haven't come to that yet.

Mr. L. S. Lyon: Maybe you had better take it apart right now, if you can, and show the court.

A. The hole in the lower body part terminates inside of this mandrel on which the packer is located, so that any fluid entering here can come up against and go out through this hole here.

By the Court:

Q. Those holes slant, do they?

A. Yes, sir. They are drilled in at a slant. I have a drawing—

By Mr. L. S. Lyon:

Q. Can you refer to the patent drawing?

The Court: You don't need to do that. I see that the holes from the upper and lower body parts go at an angle and go into or form an opening into that pipe.

Mr. L. S. Lyon: That is correct.

A. You can look through the hole here.

By the Court:

Q. They open into the pipe?

A. Yes, sir.

By Mr. L. S. Lyon:

Q. Then, any fluid going into the pipe from below the packer goes on up through those holes into the pipe?

A. Yes, sir.

The Court: I can't see it but I know it is there.

By Mr. L. S. Lyon:

Q. I will ask you to explain how this valve is operated from the top of the well.

A. It is operated by a rotation and movement of the pipe.

[fol. 63] Q. When the device is being lowered into the well how does the valve set?

A. The valve is closed while the testing apparatus is being lowered into the well.

Q. Then, after you have set the packer how do you open the valve?

A. You rotate the pipe and align the holes through the top body member and the lower body member.

Q. Do you do that from the top of the well?

A. From the top of the well by movement of the pipe.

Q. Ordinarily how long do you leave the device set there with the packer seated and the valve open to take a test?

A. It all depends on how it shows up; in other words, the amount of blow that you get through the top of the well. You see, even with a small amount of fluid coming in at the bottom, that forces the air out through the top, and by putting a wet handkerchief or anything over the top of the pipe the fluid coming in forces the air up and out, and it will be noticed that sometimes on gas wells we only leave them open for a minute and sometimes 15, 20 or 30 minutes and sometimes longer.

Q. Can you give us an idea of how long it is not uncommon to have to leave these devices stand set with the valve open in the bottom of the well to make a test?

A. Oh, 15 or 20 minutes.

Q. How do you close the valve at the end of that period?

A. By turning the pipe in the opposite direction from

which it was turned to open the valve, misaligning the ports or holes through the body part.

[fol. 64] Q. Then, after you have closed the valve what do you do in taking a test?

A. Then you withdraw the device from the well the same as you would withdraw a bit from the well, that is, the packer and the whole testing device, bringing it out with the valve closed against the entrance of fluid from the well.

Q. What does that enable you to recover?

A. That enables you to recover a sample of any fluid that may have entered the pipe during the time the valve was open and the test was being taken.

Q. By examining that fluid you determine what?

A. By the height that the fluid comes into the drill pipe you determine largely the amount that the formation tested will produce.

By the Court:

Q. Let me interrupt there. This "rat-hole", however, at first is filled with the fluid?

A. It is full of mud fluid, your Honor; yes, sir. The well is full from the very bottom to the top.

Q. Whatever you get in the way of your test, exuded from the sides, from the hole, mixes with that?

A. What little fluid would be in the "rat-hole" would come up into the drill pipe, that is, I say—

By Mr. L. S. Lyon:

Q. Through the tester?

A. It would come up through the tester and with the drill pipe. Some of it might not. It would depend on the strength of the well. If it was a strong gas well, it would blow all of that mud and everything out to the top of the well, and you might have a little oil and you might have nothing because the gas had removed everything from it when it came out. But it would be very necessary to close the device even though it was a gas well because the [fol. 65] rush of the mud fluid down the outside and back up into the drill pipe would relieve the hydrostatic pressure on the gas sand and the well might blow out.

Q. You are explaining to the court now, so as to make it clear, why it would not be safe to make a test unless you could close the valve?

A. That is it.

By the Court:

Q. What I wanted to know about, although I don't know whether it has any bearing on the situation or not, is this: The contents of the "rat-hole", that is, the amount of mud in the "rat-hole", must go into the same chamber where your testing fluid does?

A. Yes, your Honor.

Q. It will necessarily be mixed with what you test, will it not?

A. Not to any large extent. In other words, suppose you got two or three hundred feet of oil and you would have one joint of mud. That oil and mud might be emulsified and then again your mud might be in the bottom of the tester and the oil on top of it. It would depend on how it came in. Sometimes you will have a column of water even shoved up into the pipe, with the oil under it. It depends largely on which fluid entered the pipe first.

Q. At any rate, the quantity or proportion would not be serious enough to prevent you from accomplishing the purpose of the examination, knowing what you were getting?

A. No, your Honor. You see, if it was a very weak well, the oil would come in without forcing the mud out of the "rat-hole," while, on the other hand, if it was a rather strong oil well, it would bring the mud fluid out, too. But [fol. 66] the amount of mud fluid as compared to the amount of oil would be small and you would expect that small amount of mud. In other words, when we make a dry test we always bring out a little mud fluid in testing a formation that doesn't contain anything because the mud fluid trapped below the packer under a tremendous pressure comes into the pipe when the valve is open maybe a half a joint or a quarter of a joint. You see, it is not uncommon to get two or three thousand feet of oil in one of these tests.

By Mr. L. S. Lyon:

Q. In the operation of this device as it was described to you by Mr. Simmons does this involve the use of only a single string of pipe to make a test?

A. Yes. In other words, Mr. Simmons had the device and explained to me its operation, explaining the apparatus itself and the method of the apparatus and operating it.

Q. Prior to that explanation and demonstration had you ever seen a device like this or the operation of a method such as you have described?

A. I had never known of a method of making a productivity test of a formation such as that until Mr. Simmons described this method and apparatus to me. I had never known of a previous method like it.

Q. You had had vast experience in connection with the drilling of wells and the way they were drilled and tested at that time?

A. Yes; throughout the oil producing country of the United States.

[fol. 67] Q. How had they tested wells up to that time to your knowledge?

A. In drilling, when they would find what they thought to be a favorable formation, they would set casing on that formation; usually cementing the casing in the well, and then go in and drill the cement out and either swab or bail the mud fluid from the well in order to determine just how much commercial production the formation would produce.

Q. If they found that that wasn't a productive point to complete the well, then what did they have to do?

A. Then they had to reduce the size of the hole slightly less than the inside diameter of the casing which they had set in the well and drill ahead, looking for another sand. If they found a favorable sand, then they would repeat the performance of setting an additional string of casing and either swab or bail to bring the well in.

Q. What is saved by the use of this method and device, Exhibit No. 9, over the old method of setting the casing and bailing or swabbing it to make a test?

A. If you test a formation that doesn't prove productive, you have saved a string of casing, the expense and time of setting it and the expense and time of bailing to test it. In each formation that you test and would set casing on that doesn't produce, a large number of sands from cores that would indicate production are not commercial producers. In addition to that, the device can be used in separating the water sands from oil sands by drilling ahead and making a few feet of hole and testing. And, if you have water just above the oil sand, you can find out just exactly where the water sand is by the device and set your casing just below the water. And it has many advantages over [fol. 68] the methods that were used prior to its introduction into the oil industry.

Q. You first observed Mr. Simmons demonstrating the device in the hotel in Eldorado and listened to his explanation. And then what did you do about it?

A. I entered into a contract and agreement with Mr. Simmons and his partner, Mr. Henderson, in which I was to have the control of prosecuting the application through the Patent Office and was to go in that business. And after that time I bought out their interests.

Q. How soon did you make that first agreement?

A. I started negotiations on the night of the 13th of February, 1926, and drew the contract of agreement and signed it on the 17th of February, 1926.

Q. Did that first agreement involve any payment by you to Mr. Simmons and his partner in cash?

A. I do not remember if it did or not but I afterwards bought their interest and took an assignment to the patent.

Q. How much did you pay for it? Do you remember?

A. Altogether I believe about fourteen or fifteen thousand dollars; I know \$10,000 at one time.

Q. After completing this agreement, this preliminary agreement, with Mr. Simmons what did you do about this invention?

A. I had Mr. Simmons bring the device up into the hotel from the lobby, that is, up into my room. And he left it there until we completed the agreement and then I had Mr. Simmons take the device to Duncan, Oklahoma. I wired Mr. A. B. Stoddard, who was in Bartlesville, Oklahoma, an engineer employed by me, to come to Duncan and he arrived there either on or just prior to February 22, 1926, [fol. 69] for the purpose of making certain tests of the apparatus in the oil fields of Oklahoma.

Q. Will you proceed and tell us what was done with this invention by you and under your direction following your return to Oklahoma with Mr. Simmons and Exhibit 9?

A. We endeavored to get someone to let us run the device in a well and after about 30 days we secured permission from George Pace, an independent operator at Duncan, Oklahoma, in Stephens County, to let us demonstrate the device in a well that he was drilling out west of Duncan.

Q. What was the cause of the difficulty in getting permission to run this device in somebody's well?

A. It was revolutionary and no one thought that you could leave the device in a well without circulating and not have it stick.

Q. Will you explain now to the court just what you mean by that last statement, what you mean by not circulating and so forth?

A. It has been common practice to circulate and move the drill pipe continuously in order that you can keep the formation from caving and bridging around the collars of the pipe and sticking so that you can't remove it.

Q. How do they circulate ordinarily in drilling by the rotary method?

A. By pumping fluid down through the drill pipe and out at the bottom, return it in the annular space between the drill pipe and the earth-bore hole, causing a continuous circulation, which removes any cuttings or cavings that might become dislodged from the wall of the well.

[fol. 70] Q. In the operation of this Exhibit 9 is it possible to circulate the mud?

A. No. Mr. Simmons explained to me that it would not stick. And my experience in cementing casing was, if the mud was left quiescent, that the pipe could be left quiescent a sufficient length of time to make a test without any serious hazard of sticking the pipe. But that was not accepted throughout the industry. As a result I had to assume any liability to the well, the first few wells, that we tested for George Pace.

Q. Did you charge for these first few wells, for the testing operations?

A. No.

Q. You did that free?

A. Yes.

Q. And, in addition to that, you had to make what guaranty?

A. I had to agree to assume any liability to the well. In other words, if the device should become stuck or anything, I would have to drill him a new well or whatever was necessary to satisfy him.

Q. When were those first tests made?

A. They were made in March, 1926.

Q. Where?

A. The first test was made on March 17th, of which I have a written report that was dictated in my presence by Mr. Stoddard.

Q. He was the engineer of the Halliburton Company?

A. No. He was working—well, yes, for the Erle P. Halliburton Company.

Q. What device was used in the first test?

A. This very device here on the floor.

[fol. 71] Q. Exhibit 9 itself?

A. Yes.

Q. And who ran the test?

A. Mr. Stoddard and Mr. Simmons made the test, and I witnessed the test, offsetting a Houston well that the first test was made on, out west of Duncan, and I think that well too is on the Houston lease.

Q. Were those the first tests that had ever been made with Exhibit 9?

A. Yes.

Q. The first tests that had ever been made with the invention of this patent?

A. Yes.

Q. How successful were they?

A. The test that I saw was very successful, and the report would indicate that the test made with it was successful.

Q. Of your own recollection can you state whether or not the test was successful?

A. Yes, the test was successful.

Q. What is meant by a test being successful? What is a successful test, as distinguished from an unsuccessful test?

A. A successful test is to be able to screw the testing apparatus onto the drill pipe with the valve closed, the packer installed, and running the testing apparatus into the well on the drill pipe with the valve closed, and seating the packer above the formation to be tested, so that the fluid from above the packer cannot enter the test string of pipe, and then opening the valve to permit the fluid from the formation being tested below the packer to enter the test string of pipe, [fol. 72] and, after the valve has been opened a sufficient length of time to permit any fluid below the packer to enter the test string, then closing the valve and withdrawing the testing apparatus, including the packer, from the well with an entrapped sample of any fluid that may have entered the test string when the valve was open.

Q. Would the test be successful if you were able to carry out those steps and determine when the tester is removed from the well that nothing had entered the test pipe?

A. Yes.

Q. What would that indicate?

A. That would indicate that there was no fluid contained in the formation being tested.

Q. Then a successful test is one that tells you whether or not the formation contains water, oil or gas; is that correct?

A. In commercial quantities, yes.

Q. Having demonstrated on these wells of Mr. Pace that this apparatus of Exhibit 9 and the method you have described could be successfully operated, what did you next do about this invention?

A. We set about to improve the valve structure, improve the packer, and to demonstrate the apparatus in the field, making a great many tests without any charge. We did not begin to charge for tests until about November 1, 1926.

Q. Between March and November of that year you were continuously and busily engaged in demonstrating the operativeness of this invention?

A. Yes.

[fol. 73] Q. During that time you say you improved the valve and the packer. What do you mean by that?

A. Well, you see, this present device doesn't have an anti-friction bearing to carry the weight of the drill pipe, so we designed a valve of different structure, in which we could put an anti-friction bearing and make the valve easier to operate, that is, to rotate. With this present device it was necessary to use a special kind of lubricant, and then you had to suspend a certain amount of the weight of the drill pipe in order to rotate the device to operate the valve, and we designed a different type of device.

Q. Did you find that it was possible to use various styles of valve in this device?

A. Yes. There are any number of different types of device, of valve. We have designed a valve that operated by a clock mechanism, that operated by hydraulic mechanism, and operated in many ways.

Q. Did you work out two particular forms of valve that were incorporated in this tester for your commercial operations?

A. Yes, sir.

"Mr. Boyken: If your Honor please, I want to make the objection at this time that the two different forms that Mr. Halliburton is going to testify to do not come within the scope of the patent here in suit. One of these forms was the subject matter of a separate patent application which Mr. Halliburton himself filed in the Patent Office. I therefore

think any testimony relative to these two other forms has no bearing in the present suit, and I want to make that objection in advance.

[fol. 74] Mr. L. S. Lyon: I assume that we will show, or at least we expect to show that they employed them.

The Court: Yes. Let the objection be overruled.

Mr. Boyken: An exception."

The Court: Before you go into that, Mr. Lyon, I think we might as well take up the time now so that I will thoroughly understand just how this device works.

Mr. L. S. Lyon: Yes.

The Court: Start at the very bottom of the—what do you call it?

A. The testing apparatus?

The Court: With the very bottom of the hole.

A. Well, the bottom of the hole is usually—

The Court: Let me interrupt you. You first have your hole, which is drilled, I suppose, so that it has a flat bottom, we will say?

Mr. L. S. Lyon: Mr. Halliburton, I suggest that you use this sketch to help you show his Honor what he is asking about. This sketch was in the Patent Office as an illustration in our brief.

The Court: Well, you use that after. But in the first place, you are drilling your oil well to a depth, we will say, of 5,000 feet, and you want to make your test.

A. Yes.

The Court: And your hole is shaped at the end square across, or about that?

A. We will assume that he is going to set  $6\frac{5}{8}$  casing, and he is drilling, we will say, a  $9\frac{7}{8}$ -inch hole to receive that casing. Now, it is the practice to core ahead and get samples of the formation.

The Court: In rotary drilling?

[fol. 75] A. Yes, sir; to determine whether or not the formation will produce or not. When they encounter or recover a sand that has sufficient porosity and will cut oil with ether, will show oil cut in ether and other means of testing it, then they use a tester. The hole that they have drilled ahead is smaller than the  $9\frac{7}{8}$ -inch hole.

The Court: Now, you find out from my questions what I want to get at. You are in a formation and you want to make a test.

A. Yes, sir.

The Court: Just what is the shape of the bottom of your hole at that time?

A. Well, you see—

The Court: It has this core in it, hasn't it?

A. No. The core has been taken out.

The Court: Suppose the core hasn't been taken out. You have got to have some core there. You never take out all of the core, do you?

A. Practically all of it, right to the bottom.

The Court: Well, we will say that all of the core has been taken out.

A. Yes.

The Court: Then the hole is practically square across, flat, isn't it?

A. Yes, sir.

The Court: And then you are going to make your test at this point?

A. Yes.

[fol. 76] The Court: The next thing you do is to drill a smaller hole in the middle?

A. Yes. But what they do, they drill the small hole ahead, and after they drill sufficient ahead then they ream that hole down.

The Court: To the shape of that conical affair that you have there?

A. Not necessarily that shape. In looking for the sand they drill this small hole ahead, and maybe drill 100 feet, and if they don't encounter a sand in drilling ahead, then they ream that down.

The Court: What term are you using—ream?

A. Yes, ream that, so that the core hole will have the same size as the hole above. And they continue to do that until they encounter a formation that is favorable to test. Then they always have a small hole ahead when they encounter a formation that is favorable to test.

The Court: Why do they have a small hole ahead? Do you mean that that is the way they regularly do?

A. That is the way they regularly drill.

The Court: I understand you now.

A. And that leaves a shoulder, and this packer sits on or wedges into that shoulder, pressing against the formation at that point.

The Court: And it must be tight into the shoulder, and it is made of rubber so as to insure perfect tightness?

A. Yes, your Honor.

The Court: Now, all above that is this fluid?

A. Yes, sir.

The Court: What do you call it?

A. Drilling fluid.

[fol. 77] The Court: Drilling fluid; and below that is drilling fluid too, of course?

A. Yes.

The Court: Very well. I can understand how that is wedged in the hole. Now, what is below the——

A. Well, you have just a perforated pipe that screws onto this collar here, so that you keep any lumps of cuttings from coming up in and stopping up the ports in the valve.

The Court: Is that the reason for the perforations?

A. Yes, that is one of the reasons.

The Court: Those holes, those two little holes—I will call it testing fluid—allow the testing fluid—it means whatever comes into the trap?

A. Yes, your Honor.

The Court: Allow that to go into the chamber above there?

A. Yes.

The Court: And you merely withdraw that and test it?

A. Yes, but you close the valve before you withdraw it.

The Court: Of course, to prevent anything else from getting in?

A. If you packed it off the hydrostatic pressure of the fluid on the outside would rush up into the drill pipe.

The Court: Well, the valve is a very important feature of your device?

A. Yes, to be positively controlled, so that you can open and close it for your test.

[fol. 78] The Court: You must open and close it to insure that you are testing the formation you want to test?

A. Yes. In other words, you have got to open it inward to get the fluid into the test chamber, and then it is very important that you close it to keep the fluid from the outside from running down on the outside and running into the pipe.

The Court: You have to close it at the top and at the bottom too?

A. No, just at the bottom, your Honor. No fluid can get through it when the valve is closed, so, whatever fluid is entrapped in the pipe, you will see it when you disconnect the joints of pipe as the pipe is being removed from the well.

The Court: Otherwise the fluid, due to the pressure, would force itself up, and you would have just drilling fluid?

A. Yes. You wouldn't know where your test came from.

The Court: Is that all there is to this device?

A. Well, you seem to understand it, your Honor.

The Court: All right.

By Mr. L. S. Lyon:

Q. I show you a drawing, a print of a drawing, marked No. 60. Does that correctly illustrate the setting of this tester at the bottom of the well for the taking of the test?

A. Yes.

Q. Will you show that to the Court and explain the different parts to the Court?

A. You see, your Honor, this is a "rat-hole," a reduced hole, and this is your perforated pipe, and this is your packer set in the shoulder above the formation to be tested. [fol. 79] In other words, the "rat-hole" is drilled into what is supposedly oil and gas formation, and then the valve structure of the apparatus is just above the packer, attached to the valve structure, so that the fluid in back of the drill pipe is sealed off by the packer, so that any oil or gas or water in the formation below the packer can enter the perforations and up through the valve when the valve is open, and into the drill pipe.

The Court: Up until the time that valve is opened this is entirely empty?

A. Yes, your Honor. That drawing was made 12-18-26, by A. B. Stoddard.

Mr. L. S. Lyon: The drawing which the witness has just identified is offered in evidence as Plaintiffs' Exhibit No. 11.

The Clerk: Plaintiffs' Exhibit No. 11.

(Book of Exhibits, p. 223.)

By Mr. L. S. Lyon:

Q. Now, Mr. Halliburton, you said that following the demonstrations with Exhibit No. 9 you designed some improvements in the valve structure. I call your attention to Exhibit No. 5 in the Texas case, which I have here, and ask you if you can identify that model.

"Mr. Boyken: May it be understood, your Honor, that my objection goes to all these questions, on the ground that they are separate inventions, the subject matter of a separate application?"

"The Court: Yes. Very well."

A. Yes, I can identify this.

[fol. 80] Q. What is it?

A. It is a small model of a device that we developed, a testing device, having a different valve structure from the original Simmons device, Exhibit 9.

Q. When was this last form of valve structure and device designed?

A. I think the detail drawings were completed about the 1st of June, 1926, and the first device was made in June or July, 1926.

Q. Is that one of several designs that you had drawn up of different valves that could be used in this invention?

A. Yes.

Q. Is this particular one a model of a form that was adopted for commercial use?

A. Yes.

Q. Now, will you take the model apart and explain how this particular device works?

A. This device is so constructed that we could get an anti-friction bearing to carry the weight of the pipe when the pipe was rotated to operate the valve. We have here a stop cock, in other words, just a core constructed as a stop cock, with a gear on this upper one engaging a gear on the stop cock. The stop cock can be rotated at right angles. You can see through it and see the valve open and close.

The Court: Am I supposed to see through this?

A. Yes. You can see through it. You can't see through it unless the valve is rotated. You can see the opening and closing of the valve.

The Court: Yes. Where is the valve?

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A. Here is the valve.

[fol. 81] The Court: Very well.

A. That is just an ordinary plug of a stop cock.

By Mr. L. S. Lyon:

Q. You call that device your stop cock device?

A. Yes. You see, it has a slot in it, with a seat that limits the movement, the same as the original device. The only difference is that the slot is in the upper member, and, instead of being on the face of it, is cut around one-quarter of the circumference.

Q. In the operation of this stop cock device would the steps performed in making a test be any different from those performed in making a test with Exhibit 9?

A. They would be identical. You would run the testing apparatus into the well with the valve closed, set the packer above the formation to be tested, to seal off the fluid from above the packer, rotate the pipe, and open the valve, and after the valve has been opened a sufficient time to take a test, rotate the pipe in the reverse direction and close the valve, and withdraw the apparatus with an entrapped sample. The rotation of the device, the opening and closing of this device, is identical with the other device, so far as the operation of the drill pipe or the steps taken in making a test are concerned. The only difference is in the structure of the valve.

Q. I show you a drawing, No. 21, dated Duncan, Oklahoma, 4-22-26. Is that a drawing of the stop cock device that you have just explained the model of?

A. Yes.

Q. That is a print from the original drawing made in April, 1926, is it?

A. Yes. This shows the stop cock, and this is the gear, and this is the ball bearing, and this is the little pipe that [fol. 82] communicates with the stop cock when the stop cock is open and admits the fluid into the drill pipe. This shows the packing that packs the fluid off to keep it from entering the apparatus, and it shows the operation with the perforations and the packer, and it is a drawing of this exact device.

The Court: Mr. Lyon, you are suing only on the one patent?

Mr. L. S. Lyon: That is correct, but I am leading up to the fact that there is no other patent; there is no patent on these later forms. The situation that I expect to prove is that, after Mr. Halliburton acquired this original invention from Mr. Simmons, that he had engineers improve the valve structure. There is no legal reason that I know of why you are not entitled to take your invention and change the form if you can figure a better form, and it was in this later form that it was commercialized, rather than in the first original conception of the form that Mr. Simmons put it in. For instance, with the Bell telephone you couldn't hear over the original patented form, but it wasn't long before they could, from the invention, develop practical forms. It happens that his original form worked and can still be worked, but the engineers were able to provide a better form of valve.

The Court: But is the other of any importance in the vital elements of the litigation?

Mr. L. S. Lyon: I think not, except that I want to bring in the figures and the commercial success of this invention, and I don't want there to be any doubt but what these commercial forms embody the original invention, and I want your Honor to see just how they are related to it, just exactly what the differences are.

[fol. 83] The Court: Is there a patent on this?

Mr. L. S. Lyon: No, your Honor.

The Court: On this later device?

Mr. L. S. Lyon: No.

Mr. Boyken: There was an application, your Honor, and it was later abandoned.

Mr. L. S. Lyon: The Patent Office rejected it on the ground that it was all covered by the original Simmons application.

Mr. Boyken: Well, that is hardly so. We will introduce that in evidence later on, then, the application.

Mr. L. S. Lyon: I would like to first offer the model which the witness explained to the court of the stop cock device. I offer that as Plaintiffs' Exhibit No. 12.

The Clerk: Admitted, your Honor?

The Court: Yes.

Mr. L. S. Lyon: And then the drawing of the stop cock device, as Plaintiffs' Exhibit No. 13.

The Court: Admitted.

Mr. L. S. Lyon: I will ask that that be so marked.

The Court: They will be admitted.

By Mr. L. S. Lyon:

Q. In addition to this stop cock device did you design or have designed another form of valve structure to be used with this invention?

A. Yes.

Q. Mr. Halliburton, you were about to explain this next form of tester by reference to the model, Plaintiffs' Exhibit No. 19 in the Texas case. What do you call this form?

A. This is known as the "J" type tool. The valve is operated by rotating the pipe to the right and lowering away to open the valve and just picking up to close the [fol. 84] valve. This device will operate in a hard formation and the operation of the valve is very positive and is very satisfactory where the formation is not too soft and where the packer might follow down in the "rat-hole."

Q. I think you had better explain that a little more fully to the Court, the differences in these formations, what you mean by that and why one of these tools is better for one formation and another one is better for another formation.

A. Of course, in drilling an oil well you encounter all kinds of formations, and at times you might want to test where the point at which you set the packer would be a soft, unconsolidated formation. The packer has to hold up the weight of the drill pipe and the weight of the fluid, and in soft formations sometimes the packer will follow down the "rat-hole." With the stop cock type of device and the original Simmons device, Exhibit No. 9, the packer can be set in the top of the "rat-hole" and the valve rotated and opened and at the same time hold up on the packer so that it will not follow down the "rat-hole." With what we call our "J" type device you have to hold a pressure and a portion of the weight of the drill pipe down on the valve structure in order to hold the valve open. And you cannot hold up on the packer and at the same time keep the valve open. With the "J" type device, if the seat or packer follows down the "rat-hole," it immediately closes the valve, while with the stop cock type device, the Halliburton commercial device and with the original Simmons device, it is possible to hold up on the packer and at the same time keep the valve open. So in hard formations a device, where it

takes pressure to keep it open, is satisfactory but in soft [fol. 85] formations it is better to have a device where you can hold up on the packer and at the same time keep the valve open.

Q. Will you take this model of the "J" type tool device apart and explain to the Court how it is constructed? Show what position the parts are in when the device is being lowered down the well on the end of the drill pipe.

A. Ordinarily as it is lowered into the well this pin on the mandrel is in the top part of this slot.

Q. When the valve is closed?

A. When the valve is closed. It has a pocket type valve in the bottom of it. The valve can be seen in that member.

Q. Explain the operation of the valve when you have seated the packer.

A. When the packer is seated, which is screwed onto this member, by turning to the right this pin follows this "J" slot and you lower the pipe away, causing the pin to follow the "J" slot, and as the pipe is lowered away the mandrel comes down.

Q. This moves down?

A. This member moves down and strikes the valve and shoves the valve off of its seat. Then, to close the valve you pick up the pipe at the top of the well and the pin automatically follows the slot around, closing the device so that, if you let weight down on it again, it will not open the valve but will work up and down in the slot. This device is so constructed that when it is run in the hole and the packer strikes an obstruction it will not open the valve. It does not open the valve until the pipe is lowered away and turned to the right at the same time, and it is automatically closed by just picking up the pipe. The advantage of the device [fol. 86] is that it is possible to spud it, jamb it into a tight hole or shove it past an obstruction in the well without opening the valve. And that is the purpose of the "J" slot, is to be able to do that. On the other hand, if the seat gives way, the valve will close and you can pick the device back up and spud the tester to a new seat without opening the valve until you have gotten the packer firmly in the "rat-hole," on the shoulder of the "rat-hole" again.

Q. With the exception of the difference in the valve structure that you have explained, is this "J" tool device used and employed in the same way and operated by the same

steps as the original Simmons device that you have described?

A. Yes. The only difference is in the way in which the pipe is moved to operate the valve.

Q. But in both devices the valve is opened and closed from the top of the well by movement of the pipe, is that correct?

A. Yes.

Mr. L. S. Lyon: I will offer in evidence the model of the "J" tool device as Plaintiffs' Exhibit No. 14.

Q. I show you a drawing, a print of a drawing, dated 1/25/34, "Halliburton Oil Well Cementing Company, Duncan, Oklahoma." Is that a print of the original drawing of this "J" tool device that you have just explained to the Court?

A. Yes.

Q. Will you point out to the Court the parts of the "J" tool device as they appear on this drawing?

A. The valve itself is a pocket valve, shown at the bottom of the device, with the mandrel that comes down to open the valve. The mandrel is now at the top position, with the [fol. 87] valve closed. The device has a fluid chamber where the hydrostatic pressure of the fluid within the well can enter, which keeps the device in the top position with the exception of when it strikes an obstruction. And, if the packer strikes an obstruction that is greater than the hydrostatic pressure against the piston, then the pins operating in the slot will come down in the upper position of the slot and the weight of the drill pipe will be held by those pins.

Q. Without opening the valve?

A. Without opening the valve; yes. If it wasn't for this pressure chamber, you couldn't operate it.

Q. Will you point out to the court on this drawing the slot that you demonstrated here?

A. The slot is designated up here with the pin in it.

Q. That is just a detailed sketch of the slot off at the side, is it not?

A. Yes.

Q. And the pin appears there in the actual device?

A. Yes.

Q. And the slot is formed in this outer casing here?

A. In the outer casing.

Q. Do you regard these two forms of devices the "J"

tool and the stop cock device, as different inventions from the Simmons invention which you purchased?

A. The stop cock and the "J" type tool are embodied in the Simmons invention. They might constitute patentable novelty themselves and still come within the Simmons invention.

Q. Do you mean by that that they are improvements on the Simmons invention?

A. Yes.

[fol. 88] Q. And they utilize all the principles of the Simmons invention, do they?

A. Yes.

Mr. L. S. Lyon: The drawing of the "J" tool device, which the witness has identified, is offered in evidence as Plaintiffs' Exhibit No. 15.

(Book of Exhibits, p. 224.)

Q. Will you assemble these two models, unless the court wants to see them again?

The Court: You had better put them together. Or I would suggest leaving that large exhibit as it is, Exhibit No. 9, I believe it is. Undoubtedly it will be taken apart again before the case is over.

By Mr. L. S. Lyon:

Q. Will you take the witness stand again, Mr. Halliburton? After you had completed these designs of the "J" tool and the stop cock device did you put those in regular commercial use?

A. Yes. But we continually worked to improve the packers and valves and equipment, the accessories and equipment for testing.

Q. When were these devices put into commercial use, regular commercial use, by you?

A. The stop cock device was put into commercial use about the 1st of November, 1926. The "J" type tool has been in commercial use a year and a half, I guess, or perhaps two years.

Q. And those are the two forms of tools that you have used in your commercial testing operations?

A. Yes.

[fol. 89] Q. Where have you conducted those testing operations? To what territory has your business extended?

A. Louisiana, Arkansas, Mississippi, Texas, Oklahoma, New Mexico, Colorado, Wyoming, Montana, California and some tests in Mexico and Canada.

Q. By reference to a memorandum here can you tell us by years the number of jobs or tests that have been made with the tools that you have identified?

A. Yes.

Q. The tests beginning in 1926 and through June, 1931 were made by what organization?

A. They were made by the Erle P. Halliburton Company, a partnership.

Q. Who were the partners?

A. My wife, Mrs. Halliburton, and myself.

Q. That was the form of the organization conducting this business at that time, is that correct?

A. Yes.

Q. Can you tell us by months and years the number of tests that were made by that organization from 1926 to and through June, 1931?

A. In November, 1926 there were four tests made and in December, 1926 there were 17 tests made, making a total of 21 commercial tests which we charged for in 1926. We made additional tests prior to that time which I do not have any definite record of.

Q. Where no charge was made?

A. No charges were made for them. In 1927, in January, we made 35 tests; in February, 31 tests; in March, 54 tests; in April, 45 tests; in May, 44 tests; in June, 47 tests; in July, 16 tests; in August, 35 tests; in September, 50 tests; in October, 55 tests; in November, 57 tests, and in December, [fol. 90] 38 tests, making a total of 527 tests for 1927.

In 1928 we made 30 tests in January, 20 in February; in March, 29; in April, 38; in May, 34; in June, 31; in July, 35; in August, 22; in September, 36; in October, 27; in November, 27 and in December, 28, making a total for 1928 of 337 tests.

In 1929 we made, in January, 27 tests; in February, 19 tests; in March, 36 tests; in April, 46 tests; in May, 36 tests; in June, 27 tests; in July, 32 tests; in August, 31 tests; in September, 38 tests; in October, 36 tests; in November, 41 tests, and in December 35 tests, making a total of 404 tests in the year 1929.

Mr. Boyken: Mr. Lyon, why not put this in evidence? We won't offer any objection to it.

Mr. L. S. Lyon: I am perfectly willing to put the memorandum that the witness has in evidence, have it copied into the record, with the understanding that it is his testimony, if that is satisfactory to counsel.

The Court: Very well.

Mr. Boyken: Yes. There is no dispute as to the number of these tests.

The Court: Very well.

By Mr. L. S. Lyon:

Q. Then the first sheet gives the data on the tests and the dates of the tests by the Erle P. Halliburton Company, is that correct?

A. Yes. But I notice that for July, 1931 and March, 1930, inclusive, there is no record here. I account for that by the fact that the books were moved to California and these records were taken from Duncan. There were about 300 tests made during that period.

[fol. 91] Q. But this record from November, 1926, to June, 1931, shows a total of 1882 tests made with the "J" tool, is that correct?

A. Yes.

Mr. L. S. Lyon: I will ask that this be copied into the record at this point as part of the witness' testimony.

The Court: Very well.

(The memorandum above referred to is as follows):

Tests Made by Erle P. Halliburton Company

	1926	1927	1928	1929	1930	1931
Jan. ....		35	30	27	29	23.
Feb. ....		31	20	19	47	11
March .....		54	29	36	64	33
April .....		45	38	46	59	23
May .....		44	34	36	37	27
June .....		47	31	27	35	14
July .....		16	35	32	31	
Aug. ....		35	22	31	33	
Sept. ....		50	36	38	35	
Oct. ....		55	27	36	37	
Nov. ....	4	57	27	41	37	
Dec. ....	17	38	28	35	18	
	<u>21</u>	<u>527</u>	<u>337</u>	<u>404</u>	<u>462</u>	<u>131</u>

[fol. 92] By Mr. L. S. Lyon:

Q. Turning to the next sheet of the memorandum—I should have said stop cock tools, should I not? The stop cock device was used in those tests?

A. The Simmons invention; yes.

Q. I mean the device is what we have called the stop cock tool here, is that correct?

A. Yes.

Q. Turning to the second sheet of the memorandum, is this a correct statement of the wells tested by the Halliburton Oil Well Cementing Company from April 1, 1932, to September 30, 1935?

A. Yes.

Mr. L. S. Lyon: I ask that this statement be copied into the record at this point.

(The memorandum above referred to is as follows):

[fol. 93] Statement of Wells Tested by Halliburton Oil Well Cementing Company During Period from April 1, 1932, to September 30, 1935, Inc.

	1932	1933	1934	1935
January		70	80	231
February		51	90	201
March		46	128	246
April	35	41	123	269
May	30	38	121	249
June	43	29	140	247
July	29	38	156	318
August	40	57	150	359
September	41	31	210	334
October	31	56	166	
November	41	91	197	
December	39	115	210	
Totals	329	663	1,771	2,454

Total for Period, 5,217.

STATE OF OKLAHOMA,

County of Stephens, ss:

L. D. Campbell of lawful age, being duly sworn on his oath, states that he is Assistant Secretary of Halliburton Oil Well Cementing Company, a corporation;

[fol. 94] That the above is a true and correct statement of the number of well testing jobs performed by Halliburton Oil Well Cementing Company between April 1, and September 30, 1935, inclusive, as reflected by the well reports, invoices and books of account of said company in his possession.

L. D. Campbell.

Subscribed and sworn to before me this 4th day of November, 1935. Gladys W. Roberson, Notary Public. My commission expires 12-29-1936. (Notarial Seal.)

By Mr. L. S. Lyon:

Q. It shows during that period a total of 5,217 tests made, is that correct?

A. Yes.

The Court: Tests with what?

By Mr. L. S. Lyon:

Q. What were those tests made with?

A. Nearly all of those tests were made with the stop cock type device. A few of them were made with the "J" tool device.

Q. So altogether, up to September, 1935, something over 7,000 tests have been made by your organization with this Simmons invention, is that correct?

A. Yes; about 7500 tests.

Q. And were those successful tests?

A. Yes.

Q. As the term has been defined in your testimony?

A. Yes.

[fol. 95] Q. And were paid for by the customers?

A. These were charges; yes.

Q. Can you give the Court some idea of the extent to which this Simmons invention has been adopted for general standard use by the oil companies in the United States since you introduced it?

A. All operators, or practically all as far as I know, use this method of testing a well now.

Q. In preference to the old method of setting casing and bailing?

A. Bailing and swabbing; yes.

Q. When you first introduced this Simmons invention to the industry your application for patent was pending, is that correct?

A. Yes.

Q. And your patent didn't issue for some seven years after you started the business, is that correct?

A. Yes.

Q. And what happened in regard to others copying or imitating what you were doing?

A. There were numerous people engaged in the business. I doubt if we did as much as half of the testing.

Q. When did these other people start in? Did any of them start before you did?

A. No.

Mr. Boyken: I don't think that is material, your Honor, how many other people may have copied Mr. Simmons' patent. The question is whether the patent is a good patent and whether the defendants in this case infringe. I don't see why we want to try all of these other people.

[fol. 96] Mr. L. S. Lyon: I think it is proper to show in connection with the merits of the invention, your Honor, that after he introduced this and while he had no patent to stop others it was of sufficient importance and value so that other people started in the same business, and among those we will show the defendants in this case.

Mr. Boyken: The issue should be confined to the present defendants in this suit, your Honor.

The Court: The objection is sustained with reference to any other than the defendants here.

By Mr. L. S. Lyon:

Q. Has this Simmons invention which you have explained to the Court been universally adopted in the oil fields for making formation and casing tests?

A. Yes.

Q. For how long a time has it been so adopted?

A. Since 1927 and during 1927 it came into general public use.

Q. And is it being used today?

A. Yes.

Q. Throughout the oil fields of this country?

A. Yes.

Q. Do you know Mr. M. O. Johnston here in the courtroom?

A. Yes.

Q. He is the directing head of the defendant M. O. Johnston Service Corporation in this case, is he?

A. Yes.

Q. Tell us what you know about how he came to engage in this testing business and the use of the tester that this suit is being brought against.

[fol. 97] Mr. Boyken: If your Honor please, I have no objection to Mr. Halliburton stating what he personally knows about this thing but I do object to the general form of the question if it includes what anybody else may have told him.

The Court: He is asked what he knows.

Mr. L. S. Lyon: Yes, your Honor.

Mr. Boyken: Of his own knowledge.

The Court: Yes. You must confine your answer to that, Mr. Halliburton, to your own knowledge.

Mr. L. S. Lyon: Or anything that Mr. Johnston himself has admitted to him.

The Court: Whatever he knows that Mr. Johnston has said would be a form of admission and, naturally, that would be admissible.

A. I know that Mr. Johnston has been engaged in the testing business both in Arkansas and the Midcontinent and out here. He was associated with his brother back in the Midcontinent and he used the same type of tool and operated there as the Johnston Formation Testing Corporation.

By Mr. L. S. Lyon:

Q. You are familiar with the construction and operation of the tester employed by the defendants in this case, are you?

A. Yes.

Q. When and where did that first appear in use in the fields to your knowledge?

A. Well, in its present form I wouldn't know the exact date but E. C. Johnston first went into the testing business in Eldorado in March or April, 1927, after I had introduced the testing business and sent an apparatus there to make tests.

[fol. 98] Mr. Boyken: I move to strike that out because that is a different Mr. Johnston and is not the present Mr. Johnston in this case. I think we are not bound by what somebody else may have done.

The Court: Read the answer, Mr. Reporter.

(Answer read by reporter.)

Mr. Boyken: The M. O. Johnston Company is the defendant in this suit.

A. I believe that his affidavit in this case states that he was engaged in the testing business back there.

By the Court:

Q. Who is this other Johnston you are speaking of?

A. He is a brother of M. O. Johnston.

Q. What are his initials?

A. E. C., or Edgar Johnston.

The Court: The witness merely states that E. C. Johnston went into the testing business.

Mr. Boyken: Yes, your Honor. And I move to strike that out as being irrelevant and not binding on the present defendants.

The Court: I am not able to say at the present time what importance or relevancy it might have. It may become material but that is not indicated at the present time. The motion will be denied at present.

Mr. Boyken: An exception.

By Mr. L. S. Lyon:

Q. How long after E. C. Johnston started in the testing business was it before M. O. Johnston started to your knowledge?

A. Well, I wouldn't know just when they became associated together in the business.

[fol. 99] Q. Was M. O. Johnston in the business before E. C. Johnston started?

A. E. C. Johnston as far as I knew was at the head of their testing business and is the one that was involved in an interference with us. The information that I get regarding M. O. Johnston's connection with E. C. Johnston is contained in his affidavit filed in this case.

Q. In any event, it was after you had introduced this Simmons invention and demonstrated it in the oil fields

before M. O. Johnston or any of his brothers started in the business, is that correct?

A. Yes; that is true. Beginning in 1927, and just after I started to charge for making tests, there was the Lewis Oil Well Testing Company, the Johnston Formation Testing Corporation and the Houston Engineers, Incorporated, and lots of operators had their own tools made, including the Gulf Production Company. And I would say that by the end of 1927 there were some 25 or 30 people engaged in the testing of oil wells, using this Simmons invention.

Mr. Boyken: If your Honor please, I move to strike that out on the same grounds as the objection which was sustained heretofore.

The Court: The motion is granted.

Mr. L. S. Lyon: An exception, your Honor. As a foundation for the witness' testimony I would like to read and refer to the affidavit of Mr. M. O. Johnston in this case, [fol. 100] filed on the motion for a temporary injunction, in which he states—

The Court: Is he a defendant?

Mr. L. S. Lyon: He states that he is an officer, to-wit, the president of the defendant M. O. Johnston Oil Field Service Corporation.

Q. The particular operations of the defendants which you complain of in this case have occurred here in California, have they?

A. Yes.

Q. Have you your testing service in operation here in California?

A. Yes.

Q. And you maintain a staff of men and the equipment here to do the work here, do you?

A. Yes.

Q. And it is available to the oil companies at your regular established rates?

A. Yes.

Q. And are the operations of the defendants that you complain of in direct competition with your service?

A. Yes.

Mr. L. S. Lyon: If your Honor please, I would like to pause for a moment to offer in evidence the defendants' interrogatory answers and the exhibits thereto describing

their device, and then have the witness explain the device and compare it with those drawings.

The Court: Yes. Very well.

[fol. 101] Mr. L. S. Lyon: It is going to take a good deal of time to read these, your Honor. I would like to offer in evidence Interrogatories 16 and through Interrogatory 32, that is, from Interrogatory 16 to 32 inclusive, and the answers thereto of the defendant M. O. Johnston Oil Field Service Corporation and of the defendant Honolulu Oil Corporation. There is one set of questions and two sets of answers, one by one defendant and the other by the other defendant. I ask that those be copied and considered as having been read in evidence.

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#### OFFER IN EVIDENCE

(The interrogatories above referred to and the answers thereto are as follows:)

#### "XVI

"Attached to those Interrogatories and marked Exhibit A. and made a part hereof, is a drawing containing Figures 1 and 2.

"Fig. 1 is a drawing in section of a testing device employing what is known to the oil industry as a 'rat hole packer.'

"Fig. 2 is a drawing of a testing device partly in section and has the same mechanical construction as the device shown in Fig. 1 with the exception that it employs what is known as a 'sleeve packer.'

"Referring to said Exhibit A., please state

(a) do these drawings correctly show the device or devices manufactured by the defendant Johnston Oil Field Service Corporation;

[fol. 102] (b) do these drawings correctly show the device or devices used by the defendants, or either of them, since October 17, 1933, in testing formations in wells;

(c) if your answers to either subdivisions (a) and (b) of this Interrogatory is not in the affirmative, please explain in what particular or particulars such drawings differ from (1) the device manufactured by the defendant Johnston Oil Field Service Corporation, and (2) the devices used by the

defendants, or either of them, in the testing of formations in wells; (3) furnish copies of clear drawings or blueprints of such testing devices so manufactured and used by said defendants, or either of them, in the testing of wells;

(d) describe the mode of operation of each of the devices referred to in your answers to subdivisions (a), (b) and (c) of this Interrogatory."

(The answer of the M. O. Johnston Oil Field Service Corporation to the above Interrogatory No. 16 is as follows:)

"Interrogatories 16 to 19, Inc.

"See answers to Interrogatories 24 to 33, infra."

(The answer of the Honolulu Oil Corporation, Ltd., a corporation, to the above Interrogatory No. 16 is as follows:)

"Interrogatories 16 to 19, Inc.

"See answers to Interrogatories 24 to 33, infra."

[fol. 103]

"XVII

"In testing formations in a well containing drilling fluid did the defendants, or either of them, since October 17th, 1933,

(a) lower an empty string of pipe carrying a packer and having a closed valved inlet at its lower end to adjacent the formation to be tested;

(b) set the packer above the formation to be tested to seal off the drilling fluid;

(c) open the valved inlet after the packer is set to permit the fluid from the formation below the packer to enter the pipe;

(d) close the valved inlet against the entrance of fluid from the well by movement of the pipe;

(e) raise the closed pipe to remove an entrapped sample from the well."

(The answer of the M. O. Johnston Oil Field Service Corporation to the above Interrogatory No. 17 is as follows:)

**"Interrogatories 16 to 19, Inc.**

**"See answers to Interrogatories 24 to 33, infra."**

(The answer of the Honolulu Oil Corporation, Ltd., a corporation, to the above Interrogatory No. 17 is as follows:)

**"Interrogatories 16 to 19, Inc.**

**"See answers to Interrogatories 24 to 33, infra."**

[fol. 104]

**"XVIII**

**"In testing formations in a well containing drilling fluid, did the defendants, or either of them, since October 17th, 1933,**

(a) lower only a single string of pipe carrying at its lower end a packer and a closed valved inlet through the drilling fluid in the well;

(b) set the packer above the formation to be tested;

(c) open the valved inlet allowing the fluid contained in the formation being tested to enter the pipe through the inlet;

(d) close the valve to prevent the entrance of the fluid from the well through the inlet;

(e) release the packer;

(f) raise the string of pipe with the valved inlet closed against entrance of the fluid in the well to remove an entrapped sample."

(The answer of the M. O. Johnston Oil Field Service Corporation to the above Interrogatory No. 18 is as follows:)

**"Interrogatories 16 to 19, Inc.**

**"See answers to Interrogatories 24 to 33, infra."**

(The answer of the Honolulu Oil Corporation, Ltd., a corporation, to the above Interrogatory No. 18 is as follows:)

**"Interrogatories 16 to 19, Inc.**

**"See answers to Interrogatories 24 to 33, infra."**

[fol. 105]

## "XIX

"If your answers to either or both of Interrogatories XVII and XVIII are not in the affirmative, please give a full and complete description of all apparatus and methods used by the defendants or either of them, in testing formations in wells where only a single test string is employed, since October 17th, 1933."

(The answer of the M. O. Johnston Oil Field Service Corporation to the above Interrogatory No. 19 is as follows:)

"Interrogatories 16 to 19, Inc.

"See answers to Interrogatories 24 to 33, infra."

(The answer of the Honolulu Oil Corporation, Ltd., a corporation, to the above Interrogatory No. 19 is as follows:)

"Interrogatories 16 to 19, Inc.

"See answers to Interrogatories 24 to 33, infra."

## "XX

"When did you first learn of United States Letters Patent No. 1,930,987 in suit?"

(The answer of the M. O. Johnston Oil Field Service Corporation to the above Interrogatory No. 20 is as follows:)

"Interrogatory 20

"On or about the 18th of October, 1933."

(The answer of the Honolulu Oil Corporation, Ltd., a corporation, to the above Interrogatory No. 20 is as follows:)

"Interrogatory 20

"On or about the 24th day of October, 1933."

[fol. 106]

## "XXI

"Were you, at any time prior to the filing of the Bill of Complaint herein, notified in writing by the plaintiffs, or either of them, to cease infringement of the Letters Patent in suit."

(The answer of the M. O. Johnston Oil Field Service Corporation to the above Interrogatory No. 21 is as follows:)

"Interrogatories 21 and 22

"On or about the 18th of October, 1933, we received from Leonard S. Lyon, a letter in words and figures, as follows:

"Los Angeles, California,  
October 17, 1933.

Via Registered Mail

Johnston Formation Testing Co., 1521 Grand View Avenue,  
Glendale, California.

GENTLEMEN:

This is to advise you of the grant today by the United States Patent Office of Letters Patents No. 1,930,987, dated October 17, 1933, on an application filed February 10, 1926, covering Method and Apparatus for Testing the Productivity of Formations Encountered in Wells. This patent is owned by Mr. Erle P. Halliburton of Los Angeles, California, and the exclusive license to employ throughout the United States the invention patented therein is held by [fol. 107] Halliburton Oil Well Cementing Company of Duncan, Oklahoma, having an office at 810 South Spring Street, Los Angeles.

Our attention has been called to the Johnston Formation Tester being offered for rent or sale by you. The manufacture, use or sale of this device in our opinion will constitute an infringement of the above Letters Patent. On behalf of our clients, Mr. Erle P. Halliburton and Halliburton Oil Well Cementing Company, you are hereby warned to desist from any further manufacture, use or sale of the formation tester aforesaid. We are instructed to file suit against you in the United States District Court for infringement of the above Letters Patent if this notice is disregarded.

May we have your prompt reply in order that we may know whether it is necessary for us to instigate suit against you.

Yours very truly, Leonard S. Lyon."

LSL:EF.

(The answer of the Honolulu Oil Corporation, Ltd., a corporation, to the above Interrogatory No. 21 is as follows:)

"Interrogatories 21 and 22

"On or about the 24th day of October, 1933, we received from Erle P. Halliburton and Halliburton Oil Well Cementing Company, a letter in words and figures as follows, to wit:

[fol. 108]

October 23, 1933.

Honolulu Oil Corp., Ltd., Box 'H', Taft, California.

GENTLEMEN:

This is to advise you of the grant of United States Letters Patent No. 1,930,987, dated October 17, 1933, on Apparatus of Testing the Productivity of Formations in Wells. This patent is owned by Erle P. Halliburton of Los Angeles, California, and exclusive license to employ the invention patented therein throughout the United States is held by Halliburton Oil Well Cementing Company of Duncan, Oklahoma, having an office at 810 So. Spring Street, Los Angeles.

Our attention has been called to the formation tester furnished to you by M. O. Johnston Oil Well Service Corp., and it is our opinion that the use of this formation tester will constitute an infringement of the above Letters Patent. On behalf of myself as owner of United States Letters Patent No. 1,930,987 and of the Halliburton Oil Well Cementing Company as licensee, you are hereby warned to desist from any further infringing acts or we shall be compelled to file suit against you in the United States District Court for infringement of the above Letters Patent if this notice is disregarded.

We would appreciate your prompt reply stating whether it is your intention to abide by this notice of your infringing the above Letters Patent in order that we may know whether it is necessary for us to file an infringement suit against you. [fol. 109] The Halliburton Oil Well Cementing Company maintains in this district first class equipment and skilled operators and we will greatly appreciate an opportunity to demonstrate our ability to render an efficient, satisfactory testing service. We also wish to express our appreciation for the business which your Company in the past has given us.

Yours very truly, Erle P. Halliburton and Halliburton Oil Well Cementing Co., by Erle P. Halliburton."

eph-ds.

(s.)

## “XXII

“If your answer to Interrogatory XXI is in the affirmative produce and file in response hereto any and every such notice, or a true and correct copy of the same, and state the date of receipt of same by you.”

(The answer of the M. O. Johnston Oil Field Service Corporation to the above Interrogatory No. 22 is the same as its answer to Interrogatory No. 21.)

(The answer of the Honolulu Oil Corporation, Ltd., a corporation, to the above Interrogatory No. 22 is the same as its answer to Interrogatory No. 21.)

## “XXIII

“Please state which of the numerous patents set forth in Paragraph X of your answer will be relied upon merely to [fol. 110] show the state of the prior art and not for the purpose of anticipation.”

(The answer of the M. O. Johnston Oil Field Service Corporation to the above Interrogatory No. 23 is as follows:)

### “Interrogatory 23

“We will rely upon all of the patents collectively.”

(The answer of the Honolulu Oil Corporation, Ltd., a corporation, to the above Interrogatory No. 23 is as follows:)

### “Interrogatory 23

“We will rely upon all of the patents collectively.”

## “XXIV

“Have the defendants, or either of them, since the 17th day of October, 1933, in the testing of formations in wells employed

(a) an empty string of pipe to be lowered into the well to adjacent the formation to be tested;

(b) a packer carried by the pipe adapted to be positively pressed against the wells of the formation to seal off same;

(c) means at the lower end of the pipe to receive a sample from the formation, including an inlet opening into the pipe

and a valve structure including a plurality of relatively movable parts, one of which is secured to the pipe and another of which is connected to the packer.

[fol. 111] "Answer each of the subdivisions of this Interrogatory separately."

(The answer of the M. O. Johnston Oil Field Service Corporation to the above Interrogatory No. 24 is as follows:)

"Interrogatories 24 to 33, Incl., and Interrogatories 16 to 19, supra

"We have attached hereto Exhibits 'A', 'B', 'C', and 'D' which fully and completely set forth the devices and apparatus used by us and which have been used by us subsequent to October 17, 1933, in connection with testing of the formation of oil wells and in making tests for casing shoe leaks and which exhibits completely set forth the mode and manner of operation of these devices and which are incorporated herein as though herein expressly set forth as a part of the answers to said interrogatories. Defendant objects to said interrogatories, and each and all of them, in so far as they require the comparison of these devices with the device of plaintiffs or other devices referred to in said interrogatories upon the ground that such interrogations do not call for a statement of fact but the expression of an opinion and which comparisons could be made by plaintiffs if so advised from the facts herein stated.

"Defendant further objects to said interrogatories in so far as they require defendant to construe the claims of the plaintiffs and the legal effect thereof in the making of such comparisons on the ground that the same does not require the statement of facts but endeavors to require defendant to perform the function of the court in the [fol. 112] matter of the litigation, and express legal conclusions in respect thereto."

(The answer of the Honolulu Oil Corporation, Ltd., a corporation, to the above Interrogatory No. 24 is as follows:)

"Interrogatories 24 to 23 (33), Incl., and Interrogatories 16 to 19, Incl. supra

"Our only information concerning the matters enquired about in these interrogatories has been obtained from the

defendant M. O. Johnston Oil Field Service Corporation and we are advised by it that the devices and apparatus used by it upon wells owned by us subsequent to October 17, 1933, are those which are set forth and described in its answer to Interrogatories 23 to 34, inclusive, and Interrogatories 16 to 19, supra, and the exhibits attached to such answers and referred to therein, and basing our answer upon such information, we refer to and incorporate herein as our answer to said interrogatories the answer of said defendant M. O. Johnston Oil Field Service Corporation to Interrogatories 24 and 33, inclusive and Interrogatories 16 to 19, supra, on file in this proceeding and incorporate the same as though herein set forth at length.

"This defendant objects to said interrogatories and each and all of them in so far as they require the comparison of the devices of the M. O. Johnston corporation with the device of plaintiffs or other devices referred to in said interrogatories upon the ground that such interrogatories do not call for a statement of facts but the expression of an opinion and which comparisons may be made by plaintiffs, if so advised, from the facts herein by reference stated. This defendant further objects to said [fol. 113] interrogatories in so far as they require defendant to construe the claims of the plaintiffs and the legal effect thereof in the making of such comparisons on the ground that the same do not require a statement of facts but endeavor to require defendant to perform the function of the court in the matter of the litigation and express legal conclusions in respect thereto."

#### "XXV

"If your answer to any or all of the subdivisions of Interrogatory XXIV is not in the affirmative, please give a full description of the apparatus so used by defendants, or either of them in the testing of formation encountered in a well, and furnish clear drawings or blue prints of such apparatus."

(The answer of the M. O. Johnston Oil Field Service Corporation to the above Interrogatory No. 25 is the same as its answer to Interrogatory No. 24.)

(The answer of the Honolulu Oil Corporation, Ltd., a corporation, to the above Interrogatory No. 25 is the same as its answer to Interrogatory No. 24.)

## “XXVI

“Have the defendants, or either of them, since the 17th day of October, 1933 in the testing of formations in a well containing drilling fluid, used apparatus which includes

(a) a single empty string of pipe to be lowered into the well to adjacent the formation to be tested;

[fol.114] (b) means lowered into the well by said string of pipe for sealing off the drilling fluid from the formation to be tested, said sealing means being adapted to be positively pressed against the walls of the formation to seal off the same;

(c) means at the lower end of said string of pipe to receive a sample from the formation including an inlet opening into said pipe and a valve structure for controlling the inlet, said valve structure including a part connected to said sealing means and a part connected to said pipe.

“Answer each of the subdivisions of this Interrogatory separately.”

(The answer of the M. O. Johnston Oil Field Service Corporation to the above Interrogatory No. 26 is the same as its answer to Interrogatory No. 24.)

(The answer of the Honolulu Oil Corporation, Ltd., a corporation, to the above Interrogatory No. 26 is the same as its answer to Interrogatory No. 24.)

## “XXVII

“If your answer to any or all of the subdivisions of the Interrogatory XXVI is not in the affirmative, please give a full description of the apparatus so used by defendants, or either of them, in the testing of formation encountered in a well, and furnish clear drawings or blueprints of such apparatus.”

(The answer of the M. O. Johnston Oil Field Service Corporation to the above Interrogatory No. 27 is the same as its answer to Interrogatory No. 24.)

[fol.115] (The answer of the Honolulu Oil Corporation, Ltd., a corporation, to the above Interrogatory No. 27 is the same as its answer to Interrogatory No. 24.)

### “XXVIII

“Have the defendants, or either of them, since the 17th day of October, 1933, in testing the productivity of a formation encountered in a well containing drilling fluid, used apparatus therefor which included

(a) a single empty string of pipe to be lowered into the well through the drilling fluid to adjacent the formation to be tested;

(b) a packer lowered into the well by said string of pipe for sealing off the drilling fluid from the formation to be tested, said packer adapted to be positively pressed against the walls of the formation to seal off the same;

(c) means at the lower end of said string of pipe to receive fluid from said formation including an inlet opening into said pipe below said packer;

(d) a valve structure for controlling the inlet, said valve structure having a relatively stationary part connected to the packer and a relatively movable part connected to the pipe.

“Answer each of the subdivisions of this Interrogatory separately.”

(The answer of the M. O. Johnston Oil Field Service Corporation to the above Interrogatory No. 28 is the same as its answer to Interrogatory No. 24.)

[fol. 116] (The answer of the Honolulu Oil Corporation, Ltd., a corporation, to the above Interrogatory No. 28 is the same as its answer to Interrogatory No. 24.)

### “XXIX

“If your answer to any or all of the subdivisions of Interrogatory XXVIII is not in the affirmative, please give a full description of the apparatus so used by defendants, or either of them in the testing of formation encountered in a well, and furnish clear drawings or blueprints of such apparatus.”

(The answer of the M. O. Johnston Oil Field Service Corporation to the above Interrogatory No. 29 is the same as its answer to Interrogatory No. 24.)

(The answer of the Honolulu Oil Corporation, Ltd., a corporation, to the above Interrogatory No. 29 is the same as its answer to Interrogatory No. 24.)

“XXX

“Have the defendants, or either of them, since the 17th day of October, 1933, in the testing of a formation encountered in a well containing drilling fluid, used apparatus for making such test or tests which includes

(a) a single empty string of pipe to be lowered into the well through the drilling fluid adjacent the formation to be tested;

[fol. 117] (b) A packer carried by the pipe for sealing off the well above the formation, said packer adapted to be positively pressed against the wall of the formation to seal off the same;

(c) an inlet below the packer opening into the pipe;

(d) a valve for the inlet.

“Answer each of the subdivisions of this Interrogatory separately.”

(The answer of the M. O. Johnston Oil Field Service Corporation to the above Interrogatory No. 30 is the same as its answer to Interrogatory No. 24.)

(The answer of the Honolulu Oil Corporation, Ltd., a corporation, to the above Interrogatory No. 30 is the same as its answer to Interrogatory No. 24.)

“XXXI

“If your answer to any or all of the subdivisions of Interrogatory XXX is not in the affirmative, please give a full description of the apparatus so used by defendants, or either of them in the testing of formation encountered in a well, and furnish clear drawings or blueprints of such apparatus.”

(The answer of the M. O. Johnston Oil Field Service Corporation to the above Interrogatory No. 31 is the same as its answer to Interrogatory No. 24.)

(The answer of the Honolulu Oil Corporation, Ltd., a corporation, to the above Interrogatory No. 31 is the same as its answer to Interrogatory No. 24.)

[fol. 118]

“XXXII

“Have the defendants, or either of them, since the 17th day of October, 1933, in testing a formation in a well con-

taining drilling fluid and removing an entrapped sample from said formation from said well, used apparatus which included

(a) a string of pipe closed against the flow of drilling fluid as the pipe is lowered into the well;

(b) a packer carried by the pipe and adapted to be seated by manipulation of the pipe to seal off the well above the formation to be tested, said packer adapted to be positively pressed against the walls of the formation to seal off the same:

(c) an inlet to the pipe communicating with the well below the point at which the packer seals off the well;

(d) means for controlling the inlet to permit fluid from the formation to enter the pipe while the packer is set, and to prevent fluid from entering the pipe after the packer is released and the pipe is being raised out of the well.

"Answer each of the subdivisions of this Interrogatory separately."

(The answer of the M. O. Johnston Oil Field Service Corporation to the above Interrogatory No. 32 is the same as its answer to Interrogatory No. 24.)

(The answer of the Honolulu Oil Corporation, Ltd., a corporation, to the above Interrogatory No. 32 is the same as its answer to Interrogatory No. 24.)

[fol. 119] Mr. L. S. Lyon: In connection with that I would like to offer in evidence, as Plaintiffs' Exhibits 16-A, -B, -C and -D, respectively, Exhibits A, B, C and D filed by the defendants as exhibits to their interrogatory answers. I might state, your Honor, that these constitute a series of drawings of the defendants' tester and Exhibit 16-A is a description of the tester and its operation.

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Plaintiffs' Exhibit 16-A (Exhibit "A" to Defendants' Answers to Plaintiffs' Interrogatories).

#### "Exhibit A

"The Johnston testing tool used by the M. O. Johnston Oil Field Service Corporation is in three forms and for

three classes of work, to-wit: a form for testing formations by the use of a rat hole packer, a form for testing formations by the use of an open hole sleeve packer, and a form for testing casing leaks after the lower end of the casing has been cemented. These three types of devices are disclosed in the accompanying drawings marked Exhibits B, C, and D. The disclosures on these drawings are as follows:

#### Exhibit B:

Fig. 1 is a view in partial vertical section and in elevation showing the valve structure of the Johnston testing tool, irrespective of which type of packer is to be used.

Fig. 2 is a view in partial vertical section and elevation showing the packer section used in making tests of well casing for casing shoe leaks.

[fol. 120] Fig. 3 is a view in partial vertical section and elevation showing a rat hole packer used with the structure of Fig. 1 when formation tests are made.

Fig. 4 is a view in partial section and elevation showing a sleeve packer used with the structure of Fig. 1 when tests are to be made in open hole.

Fig. 5 shows two enlarged companion views in vertical section of the trip valve in closed and open positions.

#### Exhibit C:

Fig. 1 is a view in partial vertical section and elevation showing the Johnston testing tool equipped with a rat hole packer and going into the hole.

Fig. 2 is a view of the structure shown in Fig. 1 in its testing position.

Fig. 3 is a view of the structure shown in Fig. 1 coming out of the hole.

#### Exhibit D:

Fig. 1 is a view of the Johnston tester equipped with a hooked wall packer for making tests for casing shoe leaks and discloses the tool going into the hole.

Fig. 2 is a view of the structure shown in Fig. 1 with the tool in a testing position within the casing.

Fig. 3 is a view showing the structure of Fig. 1, with the tool being removed from the casing.

Referring to Exhibit B, it will be seen that a drill pipe 5 is threaded at its lower end and receives a coupling collar 6. The lower end of this collar is threaded into a trip valve housing 7. This housing is formed with a central bore 8 having a reduced threaded portion 9 at its lower end, and [fol. 121] beneath which a threaded bore 10 occurs to receive the upper threaded end of a keyed mandrel 11. The reduced threaded bore 9 receives a renewable valve seat 12 upon which a ball valve 13 is seated and by which a port 14 through the renewable valve seat 12 is normally sealed. Disposed above the valve ball 13 is a valve body 14. The lower end of this is reduced in diameter as indicated at 15, and is formed at its end with a retaining seat 16 for the ball 13 and is circumscribed by a spring 17 which rests upon the seat 12 and is compressed by a collar 18 formed as a part of the valve body 14. The upper portion of the valve body is cylindrical as indicated at 19 and reciprocates within a tubular retainer nut 20 which is threaded into the upper end of the housing 7. A spring collar 21 is seated within a groove around the extension portion 19 of the valve body 14 and expands against the bore of the retainer, and will expand to a locking position at the end of the retainer as shown in the right hand view of Fig. 5.

Retaining balls 22 are mounted within seats 23 through the wall of the tubular extension portion 19 of the valve body. These balls are of such a diameter as to insure that when in their outer positions they will lock against a tapered face 20 and when in their inner positions will move clear of the inner tubular face of the retainer 20, and will seat within an annular groove 24 formed around the circumference of a cylindrical portion 25 of a plunger 26. This plunger reciprocates within the tubular portion 19 of the valve body 14, and may move from its uppermost position shown in the lefthand view of Fig. 5, to its lowermost position as shown in the righthand view of Fig. 5. An enlarged head 27 is formed as a part of the plunger and occurs at the upper end thereof. Fluid circulating ducts 28 extend through the head and downwardly through the [fol. 122] cylindrical portion of the plunger where they communicate with a central passageway 29 within the valve body, and which passageway is in communication with lateral openings 30 extending outwardly from the valve body and into the bore 8 of the valve housing 7. The plunger is forced downwardly as shown in Exhibit C, by dropping go-

devil 31 upon it to move the recess 24 into register with the retaining balls 22 at which time the spring 17 will expand forcing the plunger and the valve body upwardly until the valve body is locked in its uppermost position by the spring collar 21 which has expanded at the end of the retainer 20.

The mandrel 11 extends downwardly within a packing box 32 which is formed with a central bore through it, the upper end of which is provided with a longitudinally extending keyway 33 to receive a key 34 carried by the mandrel 11. A tension nut 35 is threaded on to the upper end of the packing box and provides a lower bearing surface for a main valve spring 37 which is interposed between this nut and the lower face of the trip valve housing 7. A stuffing gland is formed at the lower end of the bore of the packing box to receive packing nut 39, and to make a tight joint for the packing material 38 around the mandrel 11. The packing box 32 carries a renewable valve seat 40 at its lower end against which a main valve 41 rests when in its closed position. This main valve is tubular, having an upper extension threaded into the lower end of the mandrel 11, and a lower extension receiving a safety circulating valve cage 42 which encloses a valve spring 43 and a circulating valve 44. A plurality of ducts 45 are formed through the upper extension of the main valve 41 above the valve shoulder, and establish communication with the central openings through the valve and the mandrel 11. Threaded on to the lower end of the packing box [fol. 123] 32 is a bottom collar structure 46 which has an upper tubular portion 47 forming a housing for the main valve and the circulating valve. The lower end of the bottom column 46 is threaded to receive a lower mandrel 48 which reciprocates within a sleeve 49. The upper end of the sleeve is counterbored to receive packing 50 held in position by a packing nut 51 which nut is formed at its upper end with an annular recess 52 and bypass ducts 53. Valve ports 54 are formed in the mandrel 48 and are brought to register with the annular recess 52 when the tool is removed whereby fluid pressure above and below the packer will be equalized. The lower end of the mandrel is formed with keys 55 sliding in keyways 56 in the sleeve 47, and by which rotation of the sleeve may be effected by rotation of the mandrel. A bottom sub 57 connects with the sleeve 49 and in turn may be connected with top collar

58 of the rat hole packer. This collar is tubular and is formed at its lower end with a central threaded opening to receive a packer mandrel 59 which extends downwardly through and serves as a mounting for a frusto-conical packing element 60. An upper plate 61 is disposed between the lower end of the top collar 58 and the packing element 60 and a bottom plate 62 is disposed between the lower end of the packing element and a bottom nut 63 by which the packing element is held in position upon the mandrel 59. The bottom nut 63 is counterbored at its upper end and threaded to receive the lower end of the mandrel 59 which lower end abuts against a shoulder 64 of the counterbore. A threaded opening 65 is formed through the bottom nut 63 and receives a perforated nipple 66.

The construction of the open hole packer shown in Fig. 4 will be evident without further explanation, since it is used in place of the rat hole packer shown in Fig. 3, and [fol. 124] only requires that an anchor string be attached to the lower collar to be extended to the bottom of the hole.

The construction of the hook wall packer shown in Fig. 2 of Exhibit B need not be described in further detail since this is not part of a formation testing tool, but a casing shoe tester, the construction and operation of the packing element being obvious.

In operation of the testing tool in making a formation test reference will be made solely to Exhibit C, using a rat hole packer. When the tool is lowered into the hole the parts are as shown in Fig. 1 of Exhibit C. Here it will be seen that the trip valve is in its closed and set position with the ball 13 held upon the seat 12. The main valve 41 is shown in the drawing as being in a closed position, and as being held in this position by the main valve spring 37. The position of the main valve, however, is immaterial since the trip valve will be maintained closed irrespective of any accidental jarring or resistance imposed upon the structure which might open the main valve. When the tool has reached the bottom of the hole the packer will be forced tightly into its seat and will shut off the fluid within the hole and below the packer from the fluid within the hole and above the packer. Fluid can, however, enter the perforated nipple 66 and flow upwardly through the mandrel 59 and the top collar 58 and then through the sub 57 and the mandrel 48 into the bottom collar 46 where it will be restrained from further upward flow by the main valve 41,

if this valve is closed. In any event, however, when weight is imposed upon the drill string and the upper portion of the tool, the drill pipe 5, coupling 6, the trip valve housing 7, and the mandrel 11 will be forced downwardly and will move the main valve 41 from its seat 40. Fluid may [fol. 125] then flow through the ducts 45 and into the mandrel 11 up to the valve ball 13. This is the limit of the upward movement of the fluid within the drill tool as permitted by the openings of the main valve 41. When an appropriate time has been reached to make the test and the packer has been firmly seated the go-devil 31 may be dropped down the drill string. This will open the trip valve since downward movement of the plunger will release the valve and cause it to move to an open position by action of the spring 17. Fluid may then flow upwardly within the drill stem to such a height as it would be carried by the fluid pressure in the formation. The trip valve will then remain open. When the drill stem is lifted it will draw the main valve 41 to a closed position and will then lift the packer from its seat, thus allowing the drill string and the tool to be withdrawn from the well with an entrapped sample.

It is often the practice when preparing the tool for insertion in the hole to fill the mandrel 11 and the passage-way of the main valve 41 with liquid so that there will not be a severe impact within the tool when the main valve is opened. In making tests in deep wells it is the practice to place the trip valve structure at a point considerably above the remainder of the testing tool and within the drill string. The entire length of drill string below the trip valve and down to the main valve is then filled with liquid so that the liquid within the drill string will resist the collapsing pressure of the fluid within the hole, and this distance in some instances might be several thousand feet."

[fol. 126] (Plaintiffs' Exhibits 16-B, 16-C and 16-D (Exhibits "B," "C" and "D" to Defendants' Answers to Plaintiffs' Interrogatories), are reproduced in Book of Exhibits, pp. 225, 226, 227).

Q. Mr. Halliburton, are you familiar with these drawings and the written description of the defendants' tester?

A. Yes.

Q. Will you take the drawing of the defendants' tester and explain how the defendants' tester is constructed and operated?

A. Figure 1 of the drawing shows the testing apparatus with the main valve 41 and renewable seat 40. The device is so constructed that when Figure 3 is screwed onto Figure 1 you have the complete combination of the packer, that is, of the testing device, to test a well where there is a "rat-hole." When Figure 3 is screwed onto the lower end of Figure 1 and the packer is set in the top of the "rat-hole" a further lowering of the drill pipe causes the main valve 41 to disengage from a seat 40, opening the valve. When the pipe holding the testing device is lifted up the main valve 41 returns and engages the seat 40, closing the valve. In other words, the valve is operated by a movement of the pipe, move the pipe down to open the valve and move the pipe up to close the valve. In addition to the main valve an additional trip valve or plunger valve is shown at the top, which is opened by dropping an object into the pipe after the device is run in [fol. 127] the well. The apparatus will operate without the trip valve, and it is not really a part of the main testing apparatus, but is an accessory to the testing device.

Q. Where is this trip valve placed in the pipe? Does it have to be in any special place?

A. No. It is placed above the main valve, as far up the hole as you want to put it. Sometimes I understand they put it up 1500 or 2000 feet.

Q. What is it for, this trip valve?

A. It is to keep the fluid from coming up if the main valve should accidentally be opened while the device is being lowered into the well.

Q. Does it take the place of the main valve at all?

A. No. It serves an extra function. In other words, it is a safety device, and the main valve would secure a test without the use of this trip valve.

Q. In other words, it is an addition to the regular device; is that correct?

A. Yes.

Q. Are the same identical steps employed in operating the defendants' tester to take a test as are employed with the original Simmons' device?

A. Yes; the same steps of the method of the Simmons' device and of the apparatus involved in this suit.

Q. Is there any difference at all except the form of the movement of the device to open and close the valve?

A. The only difference is the shape of structure of the valve and in the difference in the movement of the pipe.

Q. But in both the valve is opened and closed by movement of the pipe?

A. Yes.

[fol. 128] Q. As you construe the teachings of this patent in suit is there any limitation to any particular form of movement of the pipe to open and close the valve?

A. No. Claim 18 covers any type of valve, regardless of how you might open and close it.

Q. And the other claims in the patent calling for a valve with the inlet positively controlled by movement of the pipe to open and close the inlet, does that include the kind of movement employed by the defendant, as well as that employed in the original plaintiffs' device?

A. Yes. The apparatus in the patent in suit rotates to open and close the valve, and in the Johnston device it follows a reciprocating movement to open and close.

Q. But both are movements of the pipe, as called for by the patent?

A. Yes.

Q. In the operation of defendants' tester to make a test is the defendants' tester lowered into the well on the end of a single string of pipe?

A. Yes.

Q. With the valve closed?

A. Yes.

Q. And carrying the packer?

A. Yes.

Q. And the packer is then seated at or above the point where the test is to be made?

A. Yes.

Q. And the valve is then opened by movement of the pipe?

A. Yes, to permit the fluid to enter the test string.

[fol. 129] Q. And the apparatus then stands for the period of the test with the valve open?

A. Yes.

Q. And then the valve is closed by movement of the pipe?

A. Yes.

Q. And then, on withdrawal of the pipe and the device, an entrapped sample recovered?

A. If one entered the chamber it is, yes.

Q. If there is any sample to trap you will trap it with that device; is that right?

A. Yes. I don't understand that you are compelled to get a sample, if it is not there.

Q. If there is any difference in the fundamental principles of this defendants' device and of the original Simmons invention as you obtained it?

A. There are no differences other than differences in form. The Johnston device can be and is operated in accordance with the teachings of the Simmons invention.

Q. In both cases, Mr. Halliburton, of the defendants' device and of the original Simmons device, the movements of the pipe that open and close the valve are manipulated from the derrick floor at the top of the well; is that correct?

A. Yes.

#### Cross-examination:

By Mr. Boyken:

Mr. Halliburton, I would like to trace the history of the original Simmons tool here that was offered in evidence as Plaintiffs' Exhibit No. 9. You say this was the tool that was shown to you by Mr. Simmons at a hotel in Arkansas in— What year was that?

A. In 1926.

[fol. 130] Q. Was it exhibited to you in 1926 just as it is here today, or has it been changed in some respects?

A. It had a perforated pipe on it.

Q. Would you mind stepping over here, and we will trace the history of this tool. Now, I understand it had a perforated pipe at the bottom end of the tool; is that correct?

A. Yes.

Q. Would you mind standing that up the way it is in a well hole?

A. It had perforated pipe screwed onto the collar below the packer.

Q. Can you stand this up? Now, that is the way it is in the well hole, the way you have it as present; isn't that so?

A. Yes.

Q. And the perforated pipe extends below the tool, the one that you say has been removed?

A. Yes.

Q. What about the rubber packer that appears on Exhibit 9? That is a different one, isn't it, than the one that Mr. Simmons originally had on there?

A. Yes.

Q. What became of the original one?

A. I don't know. I suppose we lost it in a well.

Q. And you subsequently put on the one that appears here?

A. Yes. I think we used several different packers with it.

[fol. 131] Q. You are referring now to the piece of rubber itself?

A. Just the rubber sleeve which is a part of the packer. The mandrel is also a part of the packer. I think the original mandrel is still present in the device.

Q. But the portion that is rubber in Exhibit No. 9 was renewed because the original one was lost in the well hole?

A. Yes. You will lose that rubber packer nearly every time you run it in a well.

The Court: When you speak of the mandrel, which is the mandrel?

A. The mandrel is that portion (indicating), the tubular piece that the packer slides over.

Mr. L. S. Lyon: You mean it is the metal portion that the rubber fits on?

A. Yes.

The Court: Is it the same shape as the rubber?

A. Well, it is just this threaded piece of pipe here, your Honor. You see, the rubber itself is only a part of the packing member. This shoe here forms a part of the packer itself, and this bottom shoe forms a part of the packer. The rubber is the packing element of the packer.

Q. That perforated end we have been talking about is similar to the perforated end shown in this model Plaintiffs' Exhibit No. 12, isn't it?

A. Yes.

Q. Or substantially like it?

A. Yes.

Q. You say that this rubber portion of the packer was lost in a well hole on the original tool, and subsequently a new rubber packer was placed on it?

A. Yes. We put a number of packers on it. We had considerable trouble with packers at first. Then we used can- [fol. 132] vas and rubber instead of solid rubber. Mr. Sim-

mons had solid rubber, and solid rubber will seal, but when you pull it out you leave part of it in the hole, and then you have to get a new rubber.

Q. In any other respects is Exhibit No. 9 different from the original Simmons tool which you were shown, as you have testified?

A. Well, it has got some tool marks on it, and tongs, and so forth, showing considerable use since that time.

Q. But otherwise it is the same?

A. Substantially the same.

Q. I believe you said that was made in accordance with the drawing of the Simmons patent here in suit, but I notice there is a slight difference, and that is that the slot between the two portions of the valve is exposed in the patent drawing, while in Exhibit No. 9 that slot is not exposed.

A. No. It operates the same, though, as that in the patent. It doesn't change its operation.

Q. But in that respect Exhibit No. 9 is different from the patent in suit, that is, the drawing of the patent in suit, is it not?

A. Yes.

Q. You hadn't mentioned that before. Now, after you first saw this particular tool Exhibit 9 it was then used for practical testing purposes, was it not?

A. Yes.

Q. How many tests were actually made with Exhibit No. 9?

A. I actually saw one test made with it myself.

[fol. 133] Q. And when was that test made?

A. I have a report on the first test that was made. That was made on March 17, 1926. And the test that I saw made was two or three days or three or four days after the test that was made on March 17, 1926.

Q. Was that that packer—what was that name?

Mr. L. S. Lyon: Pace.

By Mr. Boyken:

Q. Was that that Pace test that you spoke about in your direct testimony?

A. Yes.

Q. So that you actually saw Exhibit No. 9 once actually making a test?

A. Yes.

Q. How many other times, to your knowledge, was Exhibit No. 9 used in making tests?

A. I think it was used on about 10 or 12 tests. Mr. Stoddard was in charge of it, introducing it in the field. John T. Simmons was with him, and they made two or three tests, and after Mr. Simmons left I think Mr. Stoddard continued to operate it in the field until we constructed the stop cock type device, of which I think the first one was turned out some time in June.

Q. I want to confine myself to Exhibit No. 9. You say there were 10 or 12 tests made with this exhibit?

A. Yes. I think that is about how many were made.

Q. And they were all made in the year 1926?

A. Yes.

Q. Where?

A. The first test was made on March 17th, and it was made—I don't think it was used after the other device was completed—I think some time in June, about June 15th. It might have been a little later than that.

[fol. 134] Q. So that the last time Exhibit No. 9 was used was about June, 1926?

A. Yes.

Q. What was done with it after that last test in June, 1926?

A. I had it stored in the vault in Duncan, and then we used it in the interference proceedings.

Mr. L. S. Lyon: And exhibited it at the Patent Office?

A. And exhibited it in the Patent Office. And then we used it in Sherman, in the case of Halliburton vs. Johnston Formation Testing Corporation, and now we have it here. It has been about the country.

By Mr. Boyken:

Q. When you say you used it, you mean that you used it as an exhibit merely, and not actually for making a test; is that right?

A. Yes.

Q. But it wasn't actually used for making a test since June, 1926?

A. No. But you can take it and make a test with it right now.

Q. Well, I haven't asked you that, Mr. Halliburton. Now, you subsequently, then, abandoned the use of this? Or, let

me go back. These 10 or 12 tests that were made with Exhibit No. 9, were they paid for?

A. No, they were not paid for.

Q. So that Exhibit No. 9 never was used commercially; is that correct?

A. No, it never was—well, I wouldn't say it wasn't used commercially. Just making tests, creating good will, would be commercial tests. I would say that they were commercial tests, but we didn't collect any money for them.

[fol. 135] Q. How much do you now collect for a test, under your present apparatus?

A. We charge \$200 rental for making a test.

Q. But in the case of Exhibit No. 9 no charge was made?

A. No.

Q. What did you do after June, 1926?

A. We started in to develop improvements of the Simmons invention, and are still trying to develop improvements of it.

Q. Now, the next form of tester that was devised by you was the stop cock and gear form; is that correct?

A. That is the next that we manufactured.

Q. Is that in evidence in this case?

A. Yes.

Q. As Plaintiffs' Exhibit No. 12?

A. Yes.

Q. And that is the model that I now hold in my hand?

A. Yes.

Q. And Exhibit No. 13 in this case shows the interior construction of your stop cock and gear tester?

A. Yes.

Q. Did you file a patent application for the stop cock and gear tester?

A. Yes.

Q. Whose application was it?

A. My application.

Q. Do you recall when that application was filed?

A. Yes.

Mr. L. S. Lyon: I think you have a copy of it, so if you will produce it it will save time.

[fol. 136] Mr. Boyken: Very well. I have a certified copy of the abandoned application of Erle P. Halliburton, filed December 28, 1926, Serial No. 157573, entitled "Improve-

ment in Well Testing Device." Is that the application for patent filed by you?

A. Yes.

Mr. Boyken: We offer the certified copy of the abandoned application in evidence, and ask that it be marked Defendants' Exhibit A.

Mr. L. S. Lyon: Just a minute. You are offering all the papers that are under this seal that you have here in evidence?

Mr. Boyken: We are offering the entire application file, with the application itself, the Patent Office actions and amendments, down to the time of abandonment, the file wrapper and contents of the abandoned application.

Mr. L. S. Lyon: I would like to reserve the objection that it is immaterial, but I suppose that can be argued, if necessary, when the case is argued.

The Court: It is an application, and the file shows the subsequent action of the Patent Office upon it?

A. Yes, your Honor.

Mr. Boyken: There are several other actions in there in the interval, and then its final abandonment.

The Court: The witness was a party to all of those proceedings?

Mr. L. S. Lyon: Yes, your Honor.

Mr. Boyken: Yes, your Honor. He filed the application himself.

[fol. 137] The Court: Let it be admitted.

The Clerk: Defendants' Exhibit A.

(Book of Exhibits, p. 236.)

By Mr. Boyken:

Q. Now I call your attention to the usual oath at the end of an application, which I am going to read.

Mr. L. S. Lyon: I don't think that is a part of your cross-examination. It doesn't impeach anything he said here. It is not material to anything he testified to on direct examination, what the terms of that oath are.

Mr. Boyken: If your Honor please, I would like to finish my question.

The Court: Objection overruled.

By Mr. Boyken:

Q. It is a portion of Defendants' Exhibit A, just admitted in evidence. It reads:

"STATE OF CALIFORNIA,  
"County of Los Angeles, ss:

"Erle P. Halliburton, the above named petitioner, being duly sworn, deposes and says that he is a citizen of the United States, and resident of Los Angeles, California; that he verily believes himself to be the original, first and sole inventor or discoverer of the Well Testing Device, described and claimed in the annexed specifications;" et cetera.

I am going to ask you if you executed that oath?

A. Yes.

[fol. 138] Q. And that became part of your patent application for the stop cock and gear device?

A. Yes.

Q. During the prosecution of that application—and I am now referring you to an amendment and argument filed by your then attorneys and your present attorneys in this case, under date of April 11, 1931, wherein you speak of the stop cock and gear device, and in this amendment the language is as follows.

Mr. L. S. Lyon: I object to this argument. This is not cross-examination of this witness at all.

Mr. Boyken: This is not argument.

The Court: This is some statement of the witness?

Mr. Boyken: This is a statement by the witness' attorney, who had a power of attorney in that case. I want to remind your Honor that Mr. Halliburton is an expert in this case and says that he is very familiar with patent matters.

Mr. L. S. Lyon: This document speaks for itself. Whatever statements were made in the Patent Office, the document shows for itself, and it does not have to be read.

The Court: I think the witness may be cross-examined with reference to any proceeding to which he was a party.

The Witness: I would like to ask, Mr. Abbett, if that statement was filed before or after the oath.

Mr. Boyken: You may take it and look at it yourself. But, answering that question directly, it was filed considerably after. You may look at it.

Mr. L. S. Lyon: I don't think this is material cross-examination. What argument may have been offered in [fol. 139] the Patent Office was done in an endeavor to get them to act favorably on that application.

The Court: Well, this refers to the stop cock device, what you refer to as the second device?

A. Yes, your Honor.

The Court: Wait a moment, sir. The testimony is that he applied for a patent. He explained that in his direct examination, explained it as an improvement on the original device that was not, in and of itself, necessarily subject to a patent, as I recall his testimony, but the basis being the original device. Now, apparently he made an application for a patent, and he is being cross-examined relative to those proceedings. It seems to me that is all a proper subject of cross-examination. Go ahead.

By Mr. Boyken:

Q. In that application there is a reference made to the previous Simmons patent, and I am now quoting from the action that I referred to before: "This device"—and you are referring to the Simmons patent—you recall that, do you not?

A. Yes.

Q. "This device in operation, while it worked successfully, had the disadvantage that the ground fit between parts 14 and 19 would stick, requiring careful manipulation of the pipe to take some of the weight of the pipe off the part 4."

That was a criticism of the device shown here in Exhibit No. 9, was it not?

A. Well, I would say that certainly an anti-friction bearing in a device will operate easier than a device that doesn't have one. That was the object of designing this device, so as to get away from the friction that is inherent in the original device. The original device is a commercial device [fol. 140] and will operate commercially, but certainly one would have a right to improve any apparatus that he had by adding a bearing.

The Court: Well, that doesn't exactly reach the question. The question is, was it not a criticism of the original device.

In other words, I understand that to mean, does it not point out some objection to the original device.

A. Yes, your Honor.

By Mr. Boyken:

Q. Now, this says that the fit between parts 14 and 19 would stick. Referring now to Exhibit No. 9, will you point out those two parts that would stick?

A. Well, the upper and lower body parts.

Q. Just put your hands on them so that we can see them.

(Witness did as requested.)

Q. You mean the two portions of the valve that rotate one with respect to the other, they would stick?

A. Yes.

Q. Just why would they stick in Exhibit No. 9?

A. Well, because of the large surface space, the friction of it. I wouldn't say it would stick always. Certainly it operates and did operate as a commercial device, but—

Q. I am asking you why they stick.

A. Why will any two flat surfaces that are ground together stick? Certainly it will stick, and so in that paper we were trying to point out to the Patent Office that the anti-friction bearing had an advantage over a flat surface. Now, the Patent Office denied the patent, claiming that just inserting an anti-friction bearing was not invention.

[fol. 141] Mr. Boyken: Your Honor, I move to strike out that answer.

The Witness: I think that is in the record there.

The Court: Well, yes, the latter portion of it should go out. The question was, why did they stick. But he has already claimed that most surfaces or many surfaces do stick. They stick, I suppose, because of friction between the two. To that extent the question is answered. The latter portion of the answer is not responsive and should go out. Motion granted.

By Mr. Boyken:

Q. Couldn't the two portions of the valve be loosened so that they wouldn't stick?

A. Well, they could be loosened so they wouldn't stick. You could loosen it to where you could lift the upper por-

tion off of the lower portion. It had to be tight enough, with an oil with viscosity that it would stay in there and wouldn't squeeze out, so that it wouldn't leak, and yet loose enough so that it would operate.

Q. Suppose the two valve portions in Exhibit No. 9 did stick, could you make a successful test of the well?

A. On the well in which I saw the test it didn't stick. We would tighten it up on the derrick floor and adjust those nuts, and we would get them too tight, and it would stick, and we would have to loosen them up, and it would take considerable time to adjust those nuts to the proper tension so that it wouldn't leak, and at the same time so that it could be operated to open and close the valve.

Q. If the two portions of the valve in Exhibit 9 were too close together they would stick; isn't that right?

A. Well, you could clamp it down with those nuts to a point where you couldn't turn it unless you had oil in it.

[fol. 142] Q. And then if they were far enough apart there was a liability of the valve leaking, wasn't there?

A. Yes. But the adjusting nuts made it possible, by exercising the proper care, to adjust it so that it wouldn't leak, and at the same time so that it could be turned, but naturally it would turn harder, due to sticking, than the stop cock device that has an anti-friction bearing in it.

Q. Let me read you the next paragraph in the file wrapper and contents of this abandoned application, Defendants' Exhibit No. A, which is as follows:

"After operating in the early part of 1926 with the Simmons form of tester, the invention of this application was devised in which the ball race 27 is supplied with a plug cock valve 6."

Now, that refers to the portion in Plaintiffs' Exhibit No. 12 which you called—what did you call it in your testimony—the ball bearing feature?

A. Yes.

Q. Now I am going to continue: "These parts were all provided in the apparatus in such a manner as to be protected from fluid in the well." What was meant by that, Mr. Halliburton?

A. I mean that the ball bearing and the stop cock was within a casing, packed off in such a manner that the mud fluid did not come in contact with those working parts.

Q. And what about Exhibit No. 9?

A. It has no ball bearings or stop cock to come in contact with the mud fluid.

[fol. 143] Q. And the mud fluid would be liable to get into the space between the two portions of the valve in Exhibit No. 9?

A. No, it wouldn't be liable to do that if it was properly adjusted.

Q. That is, if it was tight?

A. If it wasn't too tight.

Q. Let me continue, then: "It should be appreciated that inside of the pipe 2 of the Halliburton apparatus there is no liquid when the device is being lowered into the well, yet outside of the pipe and surrounding the parts housing the ball race and valve liquid pressures exist inasmuch as the device may be lowered 5,000 feet or more below the liquid level in the well. The design and arrangement of a valve and bearing, therefore, which could operate satisfactorily under these severe conditions was a matter requiring a large amount of study and experimentation." What did you mean by that, Mr. Halliburton?

A. Well, I mean that in order to design a device and get a ball bearing in it, that I had to design this apparatus. The Patent Office had granted some 30 or 40 patents on valve structures for testing devices, and I don't think any of them shows much more invention than this, but they denied me a patent.

Q. Let me ask you if it required a great deal of study and experimentation to get up a device such as shown in Plaintiffs' Exhibit No. 12?

A. Well, I began thinking about improvements of the Simmons device immediately after I acquired it, and this was the first development until some time in June, before this device was developed. In the meantime we had been using the Simmons device. I worked and thought about [fol. 144] six or seven years of a new type tester before I brought out the "J" type tester.

Q. At the time of adjournment last evening we were considering the application for patent which was filed by you on the so-called stop cock and gear tool, and I was reading portions from the file wrapper and contents of that patent. I want to read one more portion and ask you to explain it. Have you had an opportunity to examine this file wrapper and contents since I cross-examined you yesterday on it?

A. Yes.

Q. I want to call your attention to an argument which appears in Defendants' Exhibit A, dated April 11, 1931, and signed by Lyon & Lyon, your attorneys. Reading from page 9 of that argument, it is as follows—

Mr. L. S. Lyon: If your Honor please, I would like to reserve an objection to this line of examination on the ground that it is incompetent, irrelevant and immaterial. I think the rule is well settled that, while the file wrapper of a patent in suit may be referred to and statements made therein presented, the rule does not extent to a different application. I had a citation here this morning, which I will check again and present to your Honor in a few minutes. Well, I have it here. It says, "While admissions made in the prosecution of the application in the Patent Office may be introduced against the patentee, statements made by him in prosecuting applications for patents other than the one in suit are not admissible." That was held in the case of General Electric Company vs. Mallory, 298 Fed. 579, affirmed in 294 Fed. 562 at page 567, and certiorari denied in 266 U. S. 609. I am reading from 48 Corpus Juris, page 355.

[fol. 145] Mr. Boyken: I am not familiar with that authority, your Honor, but Mr. Halliburton is presented here as an expert. Not only that but this particular application is his own application and his contention, as I understand it, is that the thing that is covered by this application is the same as the Simmons device. In other words, there has been no departure from the original Simmons disclosure except perhaps in some slight degree of improvement. I don't think that there is any case that would decide that I am not permitted to cross-examine Mr. Halliburton both because he is the plaintiff and an expert of the file wrapper and contents of his own patent.

The Court: Give me the citation again, Mr. Lyon, will you?

Mr. L. S. Lyon: The case cited in Corpus Juris is 298 Fed. 579 and that was affirmed in 294 Fed. 562.

The Court: There must be some confusion. You say 298 Fed. is the first one?

Mr. L. S. Lyon: That is the Circuit Court of Appeals decision, affirming 294 Fed. 562. The latter case is the lower court. The appellate court decision is 298 Fed. 579.

The Court: I see. Without, of course, going into the effect of those decisions, I would think that statements made by a witness at any time that bear upon his statements upon the witness stand are proper subjects of cross-examination, no matter in what connection, whether made in connection with an application for a patent or otherwise. And especially that would apply to an expert.

Mr. L. S. Lyon: I take it this is not a statement made by this witness but is a statement they tried to impute to him because it was made by his attorneys in the course of an [fol. 146] argument in presenting his application to the Patent Office. If it was his own statement, of course, the rule would be as your Honor says, but for the purpose of impeaching or contradicting his testimony as a witness in this case I don't think the rule warrants extending it to statements made by his attorneys in trying to argue to the Patent Office in an application that is not involved here.

The Court: No. But, if it were made by his attorneys, he would be presumed to have adopted that, would he not?

Mr. L. S. Lyon: If that application was the one that was in suit here, yes. But you can't make that presumption in a collateral way where that application is not involved here and impute it to him as a basis for cross-examining or contradicting his sworn testimony here.

The Court: It may be a little bit remote. Other than that, though, I rather think it is admissible. At any rate, I will admit it and in the meantime I will examine those cases.

Mr. L. S. Lyon: May we have the objection stand, without repetition, to this line of testimony and an exception noted?

The Court: Yes. Such testimony will be deemed objected to and the objection overruled and an exception noted to it.

By Mr. Boyken:

Q. The statement is as follows: "The Simmons application fails to disclose how a valve may be protected from fluid pressure in a well testing device." In what way, Mr. Halliburton, does the Simmons device, which we examined yesterday and which is in evidence as Plaintiffs' Exhibit No. 9, fail to have the valve protected from the fluid pressure in testing a well?

[fol. 147] A. Well, the differences in the construction of the Simmons device and the valve in the stop cock device are such that in the stop cock device the valve can be en-

cased and is encased, whereas with the Simmons device it is not necessary to encase the valve, since the body part of the valve itself is a moving part but is not affected by any fluid. The working parts of the valve are protected from the fluid by the very nature of the construction of the device of the Simmons invention.

Q. Well, you haven't quite answered the question. I want to know, in the Simmons device, whether or not the valve is protected from the fluid pressure in the well.

A. What portion of the valve are you speaking of?

Q. The operating valve portion in the Simmons device, Plaintiffs' Exhibit 9.

A. Which operative portion? You have two movable parts, of which there must fluid come in contact with the exterior of the valve, while you have those parts abutting by means of the ground joint, and which the fluid cannot come in contact with the working parts that open and close the ports, that is, that portion of it that is movable adjacent to the ports.

The Court: Let me interrupt.

Mr. Boyken: Yes, your Honor.

The Court: I think it is advisable for all counsel to understand just how much of the proposition the Court understands. Therefore I feel free to suggest from time to time my own ideas of the device. I understand the patent and the drawing far better than I do the device that has been shown here. But here is a part inserted that comes in contact with the surface to be tested, and, necessarily, with the contents of the "rat-hole" tool with the little holes in it [fol. 148] that is effectually sealed off from the collar, from the mud above. That hole extends up through the solid steel material that it is made of, and by a manipulation of the other piece that slides upon this part with the hole in it the hole is made continuous; in other words, the hole in the upper piece comes in alignment with the hole in the lower piece, and therefore there is free access from the portion of the space to be tested with the theretofore empty space in the drill pipe.

The Witness: Yes, your Honor.

The Court: Do I make myself clear?

The Witness: Yes, your Honor.

The Court: All-right. Now, it is very evident, of course, that that is a very simple and, so far as I can see, a very

effectual way to get the sample of what is in the "rat-hole" up into the drill pipe, with nothing else mixed in with it except whatever comes from the stratum to be tested. Now, that is the valve, is it?

The Witness: Yes, your Honor.

The Court: Just that hole from the lower part continuing up to the upper part?

The Witness: Yes, your Honor.

The Court: That is what you call the valve?

The Witness: Yes, your Honor.

The Court: Now, that is quite simple. It is turned over by an operation on the surface of the ground, and as soon as the hole in the one part coincides with that in the other there is an open avenue or an open conduit where the flow can go?

The Witness: Yes, your Honor.

The Court: Well, that I can understand quite distinctly. I am not prepared to say that it is as clear in the instrument [fol. 149] itself—that, of course, is accounted for by the fact that I can't see through the iron—as it is in the diagram in the patent itself.

The Witness: Your Honor, you see, the difference, in the stop cock device you have a ball bearing in there, and you want to keep the mud out in connection with that valve, and you have a gear to operate the valve, and so in this application it provided for means to exclude that mud fluid from the working parts.

The Court: I don't care to go into that for the present. I will gather the information as we go along. But the gear was designed to be an improvement on the valve function?

The Witness: Yes, your Honor.

The Court: The functioning, rather, of the valve?

The Witness: Yes, your Honor.

The Court: All right.

By Mr. Boyken:

Q. Then I take it that the Simmons application for patent, and also the Simmons tool as it has been demonstrated here, does not disclose how a valve may be protected from the fluid pressure in a well-testing device; that is correct?

A. It does not disclose how you can protect ball bearings and a gear from the mud fluid, because it does not disclose a ball bearing or a gear.

Q. I am asking you, Mr. Halliburton, if that is correct or not, my statement.

A. Yes, it is correct.

The Court: Well, now, you will have to do some explaining there. I understand that the valve, if the valve consists, which it does, of a hole in the upper piece, when placed in alignment with the hole in the lower piece, is protected by [fol. 150] reason of the fact that the fluid—and by the fluid I think you are referring to the column of mud in the well—is protected by reason of the fact that the drill pipe encloses the upper portion of the valve, and therefore it is impossible for the mud to get into the valve; isn't that correct?

Mr. Boyken: I don't think that is quite correct, your Honor.

The Court: Then you will have to do a lot of explaining before I can understand the force of that question, and you had better get at it, with the device itself. Read that question again, Mr. Reporter.

(Question re-read by the reporter.)

Mr. Boyken: It is really based upon the statements in this file wrapper, statements that Mr. Halliburton's attorney made when he was prosecuting an action for the stop cock and gear device.

The Court: I understand that. Now, referring to patent No. 1,930,987, and to Figure 1, 23 is the drill pipe?

Mr. Boyken: Yes, your Honor.

The Court: The end of the drill pipe?

Mr. Boyken: Yes, your Honor.

The Court: And inside 23 there is nothing but air; is that right?

Mr. Boyken: Yes, your Honor; at certain stages that is all there is there.

The Court: I am speaking now of the time before the valve is put in operative position.

Mr. Boyken: Yes, your Honor.

The Court: Surrounding 23 is the mud or the fluid; is that not correct? How about that?

[fol. 151] Mr. Boyken: Well, the entire device there is inserted in a casing. There is a casing, not shown in this patent drawing, which surrounds the entire device when it is down in the well, and then when you get beyond the casing of course you have the walls of the formation.

The Court: Well, but inside of the casing that you are speaking of, that is not shown, is the mud, is it not?

Mr. Boyken: Yes.

The Court: And immediately in contact with the surface of 23?

Mr. Boyken: Yes.

The Court: Now, it seems to me, if I understand this proposition at all, that the proper answer to that question would be that the valve is protected from the—shall we call that the mud-laden fluid? When you say “fluid” you mean the mud-laden fluid?

The Witness: Yes, your Honor.

Mr. Boyken: Yes.

The Court: It is protected from the mud-laden fluid by the walls 23. 23 marks the walls of it.

Mr. Boyken: But the valve, your Honor, is below 23. If you will follow down on Figure 1 at the point marked 24 and 25, these are the valve breaks. That is where the two portions of the valve are. Those are the two parts that stick.

The Court: Do you mean that at 24 and 25 is where the two parts of the valve come in contact with each other?

Mr. Boyken: Yes, your Honor. At that point the two portions of the valve are either aligned so that there is a continuous channel or they are rotated part way so that that continuous channel is broken. And that is the point where [fol. 152] the valve is, that is, that the two portions of the valve meet.

The Court: Then, when you speak of preventing the fluid from coming into the valve or protecting the valve from this fluid, you mean down at that point?

Mr. Boyken: Yes. There is fluid that surrounds that point.

The Court: That is the point where the two openings come into alignment rather than down at 16?

Mr. Boyken: Yes. They come into alignment or go out of alignment at that midway point which is marked 24 in the patent drawing, and that is the point we are talking about.

The Court: But the portion above 24 revolves partially upon the portion below 24?

Mr. Boyken: That is the breaking point at 24. That is the point we are talking about and there is this fluid pressure at that point.

The Court: The fluid immediately surrounds 24, does it not, and the similar part above is numbered 19, is it not?

The Witness: 19, I believe.

Mr. Boyken: There is a packer below. If you will follow down a little lower on that same Figure, you will notice the packer at the point marked 16, where the packer commences, and that is where the two parts of the well, if we can call it such, are packed off one from the other. They are separated.

The Court: I am not clear on what you are saying.

The Witness: Your Honor, 24——

The Court: Wait just a minute.

[fol. 153] Mr. Boyken: May I clear that up for your Honor?

The Court: Yes.

Mr. Boyken: Going down a little further, with my pencil now at the point marked 16, which is the top of the packer, and then following down to the bottom of the packer, that corresponds to the rubber portion that is on Plaintiffs' Exhibit No. 9. That separates the two portions of the well so that the portion below that packer may be tested. The valve structure, however, is above the packer and it is at that point that I have indicated as marked 24 in Figure 1. The valve is at 24. And that is subject to the pressure which is above the packer.

The Court: That is plain.

Mr. Boyken: Then, in making the test, when the well is packed off, the valve is opened by rotating the upper portion of the valve structure and the break is there at 24. That opens the ports and the fluid to be tested flows upwardly through those ports because the ports are in alignment at 24.

The Court: Yes.

Mr. Boyken: Now, the point I am getting at is that 24, which is the break of the valve, is exposed to the pressure that is in the well hole above the packer.

The Court: Yes.

Mr. Boyken: To make that clear, I would like to read the entire statement again from the point I first commenced. This is a criticism of the Simmons device in Mr. Halliburton's later application. "The Simmons application fails to disclose how a valve may be protected from the fluid pressure in a well testing device. It provides a device which has the disadvantage that it will stick in operation. It

[fol. 154] clearly is not an anticipation of the improvements in the specific claims of this application."

Q. Now, I am asking you, Mr. Halliburton, is that statement correct? Is that a correct criticism of the Simmons device?

Mr. L. S. Lyon: I object to that statement. It does not purport to be a criticism of the Simmons device. It purports to show that one is an improvement over the other and that does not involve the word "criticism" at all. It involves the word "difference."

The Court: The objection is overruled.

A. In that paper before the Patent Office—

By Mr. Boyken:

Q. May I have an answer to my question?

The Court: Yes. Answer the question.

A. It is not a criticism of the Simmons device.

By Mr. Boyken:

Q. Then, is it a correct statement?

A. Yes; it is a correct statement.

Q. Tell us why.

The Court: Let me make another statement here. It is probably due to a lack of understanding in the mind of the Court but it seems to me that the vital principle of this patent is the ability to test what comes into the "rat-hole" without removing the column of the fluid and without doing the various other things involved, changing the casing, and so forth. That, as I understand it at present, is the purpose, object, or whatever you might call it, or the invention, in other words; that that is the invention. Hitherto they were not able to do this except at a considerable expense, according to what the plaintiff has said, and now, by reason of that rubber portion, they are able to stop the entrance [fol. 155] of the fluid beyond that point to relieve the lower point of the pressure of the column of fluid, and by reason of this arrangement of valves to make a test. In other words, the patent is not of the valve but of that device which accomplishes that purpose I have described.

Mr. Boyken: That seems to be the impression that the witness has given us so far.

The Court: Yes.

Q. In order to make clear this matter of the valve sticking, which we went over last night, just how does the valve stick, that is, the two portions of the valve as shown in the Simmons patent, where they meet at the point marked 24? How do they stick?

A. I have never seen it stick but I can readily see that, if you tightened the adjusting nuts too tight, it would stick, the same as if you tightened the adjusting nuts on a stop cock and gear device too tight, that the core of the stop cock would stick. And the moving parts that cut off the fluid and permit the fluid to pass are subject to exactly the same pressure as the parts in the Simmons device. But in the stop cock device provision is made so that the mud fluid does not come in contact with the gears or the balls. But so far as the pressure of the mud fluid coming in contact with the core of the stop cock, which is the moving part that opens and closes there, it comes in contact with that to exactly the same extent that it does with the Simmons device. Of course, both devices necessarily have to come in contact with the mud fluid when they are running the well. In other words, the mud fluid is permitted to come against the core of the stop cock in the Halliburton stop cock and gear device, and the mud fluid is permitted to come in [fol. 156] contact with the face of the ground joint, which is equivalent to the ground core of the stop cock device in the Simmons device. So the mud fluid must necessarily come in contact with those ground joints and they have to be ground and fitted so that the mud fluid cannot enter. That is true of the Simmons type of valve and it is true of any stop cock valve.

Q. Did the mud fluid enter in the Simmons device when it was in operation?

A. To my knowledge it never did.

Q. If it did enter, would that be a disadvantage?

A. Well, if it entered to an excess, if it leaked to a point where it would destroy the test, yes, it would be a disadvantage. But, certainly, that is common to any valve and when it is properly adjusted it doesn't leak and when it is properly ground. All valves are ground so that they don't leak, that is, when they are properly ground, but when they leak it is due not necessarily to the design of the valve but to lack of care in adjusting it and in grinding it.

Q. Can you grind and fit the valve in the Simmons structure so that it will operate and still will not leak?

A. Yes.

By the Court:

Q. When you say grind the valve, Mr. Halliburton, what do you mean?

A. You grind those two surfaces that exclude the fluid so that they fit so closely that a fluid cannot move in between those fitted parts.

By Mr. Boyken:

Q. It sticks, then, if the two moving portions of the valve are tight, is that correct?

A. If it is clamped up tight enough. It all depends on how tight. Tightness can be measured in degree.

[fol. 157] Q. And, if it is loosened, it will leak?

A. Yes. But it all depends on what you mean by "loosened." That is also by degree. If you clamp the nuts down so tight you couldn't move it, it would be too tight; and, if you loosen them and leave them so loose that there would be a sufficient space to permit the fluid to pass in through there, then they would be too loose. So it is just a question of adjusting those nuts the same as you adjust the nuts on any stop cock and drawing the core into a point where it does not leak.

Q. What is meant by this statement, "It provides a device which has the disadvantage that it will stick in operation"? Is that what you have just explained?

A. Well, certainly, what was intended to be expressed there was you have to rotate it and, if you have ball bearings to carry the weight of the drill pipe, it is easier to rotate than if you do not have. That is what was intended by that statement there.

Q. I have just one more sentence to read. Your attorney says with respect to the Simmons device, "It clearly is not an anticipation of the improvements in the specific claims of this application." What is intended by that?

A. In that application the claims were drawn narrow for the use of an anti-friction bearing with a stop cock operating a gear and eliminating those elements, that is, adding elements that are not shown in the Simmons patent. The Patent Office, however, finally rejected a patent on that application, citing the British issued Simmons patent.

[fol. 158] Q. You need not go into that unless you feel it necessary to answer my question.

A. I think the entire file wrapper will explain everything without just reading a few lines from it.

Q. The result is that you didn't get a patent, isn't that correct?

A. Yes. It was rejected on the Simmons British patent.

Q. Do you still feel that you should have gotten a patent?

Mr. L. S. Lyon: I object to that on the ground that it is not cross-examination.

Mr. Boyken: I will withdraw the question and put it in this way.

Q. Is it your opinion that this application discloses novelty over the Simmons patent?

Mr. L. S. Lyon: I object to that as immaterial in this case.

The Court: That might be material where the plaintiff is produced as an expert.

A. That application is as different from the Simmons application—

By Mr. Boyken:

Q. Can you say yes or no and then make your explanation?

A. Yes.

Q. Do you still think so?

A. It is different from the Simmons application and is as much different from the Simmons application as the Johnston patent is from the Simmons application or from 50 other patents that have been issued on testing devices since the Simmons application was filed in the Patent Office.

[fol. 159] "Mr. Boyken: Mr. Reporter, will you be good enough to read that question again?"

(Question read by reporter.)

By Mr. Boyken:

Q. What is the answer?

Mr. L. S. Lyon: The answer was yes, with that explanation."

Q. I understand on your examination that you made some 10 or 12 tests with the Simmons tool, Plaintiffs' Exhibit No. 9, and that they were all successful. Is that a correct statement?

A. I stated that I only saw one test myself; that there were some 10 or 12 tests made, under the direction of Mr. Stoddard, by Mr. Simmons, who is here in the courtroom, and others who worked with Mr. Stoddard. I know that I have a written report here, that was dictated in my presence, in which—

The Court: One moment, Mr. Halliburton. That is hardly an answer to the question. The question was did you see the tests made.

By Mr. Boyken:

Q. How many of those tests did you see yourself?

A. I saw one.

Q. And there were 10 or 12 altogether but the others you did not see?

A. No.

Q. Were these tests all successful or were some of them unsuccessful?

A. I only saw one of them.

Q. And that is the only one you can testify to today?

Mr. L. S. Lyon: If you want to ask him, he can tell you what was reported to him. I haven't any objection to Mr. [fol. 160] Boyken asking Mr. Halliburton what the reports were to him, as to whether the tests were successful or not. The tests were being run by men in his organization. He was the president of the company and they reported to him whether they were successful or not. Now, if Mr. Boyken wants to ask him what the reports were, it is quite all right with me.

The Court: He is being asked if they were successful.

Mr. L. S. Lyon: Yes.

The Court: And he should answer that in whatever way he sees fit. If he did not personally know, he could, then, recite from the reports, I would think. Just let us have your knowledge on it. Were they successful or what do you know about these tests other than the one you have just mentioned?

A. They were reported as being very successful; and Mr. Stoddard and those interested in it were very enthusiastic about the success of the tool.

By Mr. Boyken:

Q. Do you remember a suit that was filed against you for \$12,000 because of the operation of the Simmons tool at that time?

A. I have been sued a lot of times. What is the style of the case?

Q. Do you remember a suit that was filed against you by reason of the use of this particular Simmons device, Exhibit No. 9?

A. No, sir.

Mr. L. S. Lyon: I think the suit should be identified if there is such a suit.

The Court: The question has been asked and answered.

[fol. 161] By Mr. Boyken:

Q. What is the answer?

A. The answer is that I have never been sued for the use of that tool on any well.

Q. That tool was used on the Pace well, was it not?

A. We have tested lots of wells for Mr. Pace.

Q. Was Exhibit No. 9 used on one of those tests for Mr. Pace?

A. Yes; it was used on several wells for Mr. Pace.

Q. The answer is yes, then, is it?

A. Yes.

Q. Did Mr. Pace sue you at any time by reason of the use of that tool on his well?

A. I have replied that I have never been sued by Mr. Pace or anyone else for any damage resulting from any—

The Court: No, that isn't the subject at all. Do you remember having been sued by Mr. Pace for the use of this instrument? I believe you said you did not. Is that correct?

A. Yes, your Honor.

The Court: Very well. That is enough.

By Mr. Boyken:

Q. Were you ever sued by anyone for the use of Plaintiffs' Exhibit No. 9.

A. No.

Mr. L. S. Lyon: That has already been asked and answered, your Honor.

The Court: Well, he has answered it just now. He said no. I do not attach a great deal of importance to the fact that somebody brought a suit. That wouldn't mean very much to the Court.

Mr. L. S. Lyon: I don't think anybody did on this Exhibit 9. I never was so informed.

[fol. 162] The Court: Well, that is the witness' opinion. That is his statement. Now, it is for the other side to show something different.

Mr. Boyken: If your Honor does not attach very much importance to it we won't go into it any further. But there was testimony in the Texas suit with respect to it, and that caused the inquiry here.

The Court: I say I do not attach much importance to it, because that is a thing that might happen through misunderstanding or for many reasons. What we are concerned with is the success of the invention, not its failure, I suppose. The fact that somebody thought it was a failure, wouldn't mean very much.

By Mr. Boyken:

Q. Then let me ask you, Mr. Halliburton, after these nine tests or ten or twelve tests were made the tool was put away, wasn't it?

A. Yes.

Q. Did you ever make any other tools in accordance with the drawings of the Simmons patent?

A. Yes.

Q. Which tools were those?

A. We made one other tool. I don't think the tool was ever used.

Q. One other tool?

A. Yes. I think it is still in the warehouse. We only made it about a year ago.

Q. Why didn't you continue to use Plaintiffs' Exhibit No. 9 and this other tool that you speak of?

A. Well, we thought that the stop cock device, that in that we had a better valve than the Simmons device, and it made operation easier.

[fol. 163] Q. It wouldn't stick?

A. Unless it was handled with proper care it would.

Q. So you abandoned the use of the form shown in the Simmons patent for that reason?

A. We did not use it after we put the stop cock type device in the field. From then on we manufactured only stop cock devices, with the exception of a few experimental tools that we made.

Q. What I am trying to find out is why you did not continue to use the device that is disclosed in the drawings of the Simmons patent?

Mr. L. S. Lyon: That has been already asked and answered, your Honor.

The Court: Yes; I think it has already been answered. He said he thought the other was a more successful device. Is that correct?

A. Yes, your Honor.

By Mr. Boyken:

Q. A more successful device because the valve did not stick?

A. Well, because we had a ball bearing in it that would carry the weight of the pipe, which made it easier to operate.

Q. And also for the reason that the valve would not stick?

A. Well, that is exactly what does stick the valve, is the weight of the pipe.

Q. So that by taking the weight of the pipe off the valve would not stick?

A. Well, you do not have to take all of the weight of the pipe off. You take only a portion of it off. You suspend a portion of the weight of the drill pipe and leave a certain portion of it unsuspended to press the packer [fol. 164] into the seat, and of course that is adjusted so that you can turn it.

The Court: The court's understanding of the position of the plaintiff is that the additional advantage aided by the stop cock arrangement did not go to the extent of being new invention, that it was rejected because the invention lies in the Simmons patent, and that the stop cock was clearly an improvement in the valve arrangement, which is merely an incident of the Simmons patent.

Mr. Boyken: So that you may know our position on that point, I will say that our position is that the Simmons patent is invalid because it shows an inoperative, impractical structure.

By Mr. Boyken:

Q. Now getting on to another subject, you said that some 7500 tests were made by the Erle P. Halliburton Company and the Halliburton Oil Well Company? Is that about the right figure?

A. Yes, that is about the number of tests that we made.

Q. Can you tell us, of the 7500 tests, how many were made, or approximately how many were made by the stop cock and gear device, and how many by the later developed "J" tool?

A. Perhaps 7,000 of those tests were made by the stop cock and gear type device.

Q. When was the "J" tool or "J" slot tool first commercially used?

A. I think the tool as designed here in court was first used in the early part of 1934; perhaps in January or February.

[fol. 165] Q. And then that was later on changed or improved by putting two valves in there instead of the one that is shown here?

A. No. I think one of the first devices that we used provided for two valves.

Q. Two valves?

A. Yes. So that if one was cut out by gas the other would close.

Q. Is that an optional form of making that "J" tool, with either one valve or two valves?

A. You could add a half a dozen valves.

Q. It wouldn't make any difference?

A. No.

Q. Why do you put the two valves in there?

A. For the same reason as anyone would like to have two valves, so that if one valve cuts out you have still got one that would close.

Q. Why the half dozen valves—for the same reason?

A. Yes. That would be that much greater insurance that if gas cut out three or four of them, then you would still have one left, if you had five. It so happens that gas cuts out the valves in any of them at times.

The Court: Gas?

A. Yes, your Honor. You see, gas brings sand in with it. It is the same as a sand blast, and it will cut the tool if you don't close it.

By Mr. Boyken:

Q. When did you first make tests in the State of California?

A. When did I first make tests in California?

Q. Yes.

A. I think the first test we made was around 1930 or 1931. It has been four or five years ago.

[fol. 166] Q. Was that a formation test?

A. I think the first tests that we made were formation tests. I am not certain.

Q. When did you first make water shut-off tests?

Mr. L. S. Lyon: In California or in some other place?

Mr. Boyken: Anywhere.

A. We made our first water shut-off tests around 1927.

Q. When did you first make them in California?

A. I don't know; I guess about the time we came out here.

Q. And that was when?

A. In 1930 or 1931, sometime around there.

Q. Don't you recall when you first commenced testing in California a little more definitely than that?

A. No, I don't know definitely when we did come in.

Q. We have had quite a discussion here about this so-called "J" tool. What is the correct designation of that tool? Is it "J slot" or "tool"?

A. We designate it "J tool," as distinguished from the stop cock type tool.

Q. Now, I don't know that we have a good explanation of the operation of that tool, and I am going to show you a diagrammatic drawing, colored, which has the valve arrangement emphasized, and ask you if that is substantially the structure of the valve arrangement in the "J" tool. Let us take the figure to the extreme left.

A. Yes; that shows a portion of the valve structure. It does not show how the entire device works.

[fol. 167] Q. No. It is intended to be a diagrammatic drawing, but it is a fair diagrammatic drawing of the valve structure, is it not?

A. Well, it shows two poppet type valves.

Q. The figure at the extreme left shows the valves closed?

A. Yes.

Q. The following figure, the one in the center, does that show the valves closed or open?

A. It shows the valves open.

Q. And the one to the extreme right shows them closed again?

A. The one to the extreme right shows them closed.

Q. So that in the operation of the tool in the well the extreme left figure shows the valves closed, the one in the center shows them open, while the liquid or fluid is flowing upward, and the one on the right shows them closed again, as in the original figure?

A. Yes.

Mr. I. S. Lyon: Is there supposed to be any difference in the first and third figures?

Mr. Boyken: No, no difference; just going in the well, operating, and going out. The first and third figures are the same. I am just trying to get a clear explanation of how this thing works. That is all I am going to use it for.

By Mr. Boyken:

Q. Will you explain to the Court why the valves are closed—first, show the valves, the valve stems and the valve seats. You might do that with a pencil as you go along with [fol. 168] the explanation. I want to get a clear understanding as to how this “J” tool operates with respect to the valve structure.

A. Well, we will take the red object in the first figure. It shows the common poppet type of valve fitting against a black seat to receive a poppet type of valve. The upper valve is of the same structure that is shown here as being yellow.

Q. In order to open those two valves so that the fluid in the bottom of the well, which is packed off by the “rat-hole” packer, may go upwardly in the pipe, what is done?

A. The drill pipe is lowered away and turned to the right.

Q. The drill pipe is the upper portion, and you say that is turned to the right?

A. Yes.

Q. And by turning the drill pipe to the right what happens with respect to the pin and slot?

A. The pin is turned to the right and follows the slot down and permits the mandrel to pass down and rest on top of the valve for opening the valve. In order for the drill pipe to be lowered away it has to overcome the

hydrostatic pressure in its cylinder surrounding the mandrel or plunger, so that the plunger can be moved down and return to up position, holding the entire testing apparatus down.

Q. Getting back to this drawing, I am going to mark on the figure at the extreme left the pin by the number 1, and the slot by the number 2, and the drill pipe by the [fol. 169] number 3. Now, you say you rotate the drill pipe 3, and the pin 1 then goes in the slot 2, as shown in the second figure?

A. Well, your pin that you have marked number 1 normally is not in the position as shown in this figure.

Q. What position is it in?

A. It is at the top part of the slot rather than at the bottom part, as shown in that figure.

Q. When it is at the top part, in order to open the valve what is done?

A. The pipe is rotated to the right and lowered away.

Q. And then the pin 1 goes into the slot 2, as shown in the second or middle figure?

A. Yes.

Q. When that pin 1 goes into the slot 2 what happens to the valve?

A. The valve is pressed open.

Q. Where is the valve structure, the valve seat? Would that be at the place I mark 4 in the left-hand Figure?

A. Diagrammatic, yes.

Mr. L. S. Lyon: So that the record will be clear, I think this word "valve" is being mixed up here by using it to include the whole valve device and to include a particular part of the valve. Now, you said "valve or valve seat." You meant the valve seat in that question, didn't you?

Mr. Boyken: I believe so. What I want to do is to get a good explanation of this movement here so that the court will understand it.

Mr. L. S. Lyon: I just don't want the court to have any difficulty in understanding that the term "valve" ap-[fol. 170] plies to the entire device, and that the parts that open and close include, for one part, the valve seat. The valve is not the hole and it is not the valve seat or not the part that sits on the valve seat, but is the whole structure that opens to admit the fluid and closes to prevent it from leaving.

By Mr. Boyken:

Q. I have marked the valve seat or intended to mark it by the number 4, and the valve stem in both cases on the left-hand Figure by the numbers 5. Those valve stems go up and down, do they not, in the opening and closing of the valve?

A. They press down and close, as any poppet type valve closes.

Q. In the middle figure those valves are pressed down so that the valve stem is moved downward and unseats itself, is that correct, in both the yellow and the red valves?

A. Yes.

Q. Just trace it, showing the course of the fluid, how it comes upwardly through these open valves.

A. Well, the fluid passes in through the perforations and through the valves, and out through the holes drilled in here, that is, inside and under the valve seat, and the valves are interchangeable. It passes through the seat and up through the hole and up through the center of the mandrel and on into the pipe.

Q. That occurs because both valve stems are pressed downwardly?

A. Yes.

Q. By the operation of the drill pipe?

A. Well, not just pressed downwardly. You have to turn it to the right and then press down.

[fol. 171] Q. Downwardly?

A. Yes.

Q. And that enables the fluid to pass through these valves then and find its way up?

A. Yes.

Q. And in order to close the testing device that is shown in the last figure, which corresponds to the first figure?

A. Yes.

Q. The pin then is brought back from its lowermost position in the slot to its original position, in order to close the valve?

A. Yes. But you don't show it in the original position in this figure.

Q. Well, you mark on there the original position.

A. The original position is in the top here.

Q. I will mark that 6. That is the original position?

A. Yes.

Q. And how is the pin brought back to its original position? What is done with the drill pipe?

A. As the pipe is picked up the pin turns the pipe back to the left, and it can move up to the point of original position, where the pin is at the top of the slot.

Q. And that closes the valves then?

A. Yes.

Q. That brings the valve stem upwardly so that it seats at the point marked 4 in the left-hand figure?

A. Yes.

Q. And then the tool is ready to withdraw?

A. Yes.

[fol. 172] Q. Can you re-establish circulation in case something happens to the tool in the well by reason of the use of this "J" tool?

A. You could pump down through it by overcoming the resistance of the springs that hold the valve closed.

Q. Just tell us how you can re-establish circulation there.

A. Well, I don't understand that you would want to re-establish circulation.

Q. Well, suppose you did?

A. Well, if you did you could pump through there.

Q. I am going to ask you if you didn't get out a blueprint which describes that "J" tool, the blueprint I now hand you?

A. Yes; I think we got that out.

Q. That is yours?

A. Yes.

Q. You say in here, "Circulation can be established whenever necessary without opening the tester." Is that a correct statement?

The Court: What is that?

Mr. Boyken: The tester.

A. Well, as a matter of fact—

By Mr. Boyken:

Q. I am asking you if the statement is correct?

A. You couldn't establish circulation without the valves opening. The fluid itself will open them.

Q. Well, let us first find out whether this — a correct statement, "Circulation can be established whenever necessary without opening the tester."

A. Well, with a thorough understanding of this anyone would understand that statement. On the other hand, you [fol. 173] take the stop cock device, if you are going to pump down through the valve you would have to open it. In this particular case the mud fluid pumped in here will open. So the statement is not literally correct.

Q. Not correct?

A. Not literally correct. It is correct to anyone who understands what is meant by that.

Q. Then it is a half-truth, would you say?

A. No, I wouldn't say that. I would say that you would have to interpret that with some knowledge of the operation of these devices.

Q. How do you interpret that statement? And in interpreting the statement will you show in this diagrammatic view how that circulation can be established?

A. I will read the statement and add the necessary words. It says, "Circulation can be established whenever necessary without opening the tester, since the fluid will automatically open the valve."

Q. Well, let us see how the fluid will automatically open the valve in the "J" tool

A. Well, the pressure against the valve will unseat it.

Q. Can't you give us a little better explanation? Suppose the fluid or the rotary mud is pumped down through the drill pipe and it comes down in the tool here, then will your fluid that is pumped down unseat these valves?

A. Yes.

Q. And the fluid will come down all the way to the bottom and be eliminated through the perforated holes at the bottom?

A. Yes. You can pump all the way down through it. You might do that if you got stuck in the well.

[fol. 174] Q. In order to do that you don't have to rotate the pipe, do you?

A. No, you wouldn't have to rotate it any more than you do to pump through a flow collar and a casing. It has a back pressure valve in it.

Q. Why is it that you reestablish circulation by pumping down through the drill pipe and unseating these valves and eliminating the fluid at the bottom?

A. I don't know that we have ever done that.

Q. Why is this tool constructed so that it can be done?

A. Well, if you got stuck in a well and you wanted to establish circulation, that is one means of doing it. With the other device we use a check valve just above it, so that we can circulate.

Q. I would like to get this over as rapidly as I can, Mr. Halliburton. So that the court will understand the operation of this tool, have you anything else to say with respect to the operation of this tool here to make it clear how the valve structure operates?

A. I think we have pretty well covered it. We have shown that the valves are opened by the mandrel coming down and pressing on the top of the top valve which, in turn, strikes the bottom part of that valve, striking the top part of the lower valve and opening the two valves, it being necessary that the plunger overcome the hydrostatic pressure in a cylinder not shown on these sketches, within the device itself.

Q. And the spring tension does what to the valves?

A. Those are ordinary poppet type valves, the same as you have in an automobile motor, in which the springs [fol. 175] close a valve. In an automobile motor you have a cam that lifts the valve off this seat, compressing the spring, and then the spring closes the valve as the cam moves away. And this is the same type of valve as is used in an automobile motor.

Q. Have you also an equalizing valve in that device, which is not shown in this drawing?

A. I don't know whether there is an equalizing valve shown in there or not. We have used an equalizing valve practically ever since we have been in the testing business.

Q. What is the object of a further or equalizing valve in a structure of this kind?

A. You let the fluid on the outside, by-pass the packer and pass under the "rat-hole" below. We first accomplished that by drilling a hole in the mandrel which the packer was on, and when you pick up the laminated rubber pieces it would drop away from the top and let the fluid pass in to the mandrel and through a hole in the mandrel and then down through the perforations and into the "rat-hole."

Q. Will you put a mark on that drawing to show where the equalizing valve is located?

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A. The equalizing valve is located just above the packing member so that it passes inside and past the packer. Apparently it is intended to show an equalizing valve here.

Q. I will mark that "7." That is where the equalizing valve is located, is it?

A. On that particular drawing; yes.

[fol. 176] Q. That is the Figure to the extreme right. Now, how does that equalizing valve work and what is the object of it?

A. It works to permit the fluid from above the packer to pass below the packer.

By Mr. L. S. Lyon:

Q. When?

A. When you get ready to remove the packer.

By Mr. Boyken:

Q. Why do you want the fluid to pass below the packer when you want to remove the packer?

A. In order to take the weight off of it. That is very old in the art. I can show you a patent going back, I think, to 1880, in which they did that. In other words, you would swab the hole in coming out if you packed and fit very close unless you had a by-pass to let it pass.

By Mr. L. S. Lyon:

Q. Do you mean that is an ordinary thing to do in operating packers in an oil well?

A. Yes. That is very old in the art.

By Mr. Boyken:

Q. In other words, if the packer, which I will mark "8", should stick in the well hole, it would be necessary to in some way assist that in removing it from the well, wouldn't it?

A. Yes. You would have to lift the weight of the fluid if it fitted tight enough to swab.

Q. So that you want fluid below that packer?

A. Yes. There is a patent in the prior art there which shows a by-pass, which I can show the attorneys and the Judge.

[fol. 177] Q. I don't think we want that, although I have no objection to it. If there is difficulty in removing this "rat-

hole" packer as shown in the diagrammatic sketch here, you do have fluid below the packer, is that right?

A. Well, it is only when you pick up that you let the fluid pass.

Q. And so the fluid enters at what point?

A. At the point marked "7".

Q. And is eliminated at what point?

A. It passes out through the perforations.

Q. I will mark those "9". So that you have pressure below the packer?

A. Well, so that the pressure is equalized above and below the packer.

Q. Above and below the packer?

A. Yes.

Q. That equalizing valve is not shown in detail on this sketch, is it?

A. No.

Q. Is there anything else about this that you want to explain? Do you have those equalizing valves on your "J" tool?

A. This is a "J" tool. It is a part of the packer and we buy a lot of our packers containing equalizing valves.

Q. And you use equalizing valves?

A. Yes.

Q. Is there anything else about this "J" tool that you wish to explain further?

A. If the court understands it, I don't think there is.

Q. Otherwise, I will pass on to other questions.

[fol. 178] The Court: I will have a few questions as soon as you are through.

Mr. Boyken: I am finished on this subject.

By the Court:

Q. Why does not the valve open when number 1 is in the first position?

A. That pin limits the movement of the mandrel down to where it can't touch the valve.

Q. Why, or in what way, does it limit it?

A. The movement is limited by that pin, the downward movement. It has to move farther so you have to turn the mandrel around. The pin is on the mandrel and you turn it around to where the slot is extended down further,

and that permits the mandrel to move down to a point where it strikes the valve.

Q. Do you mean the pin could go no farther than as shown—

A. As shown by that slot.

Q. In the first position?

A. Yes; when you are just running into the well. You have to turn to the right to get over in the slot before the mandrel can strike the valve and open it.

Q. Why don't you put your stop place a little bit further and even with the lower end of the slot and not turn it?

A. If you did that and ran into a tight place with your packer and the packer would hold up on the pipe, your mandrel then could come down and strike and open your valve and you would open it before you reached a point where you wanted to set your packer. Sometimes in making tests the seat and packer will leak a little bit. So we pick up and we can spud or move the pipe up and down and [fol. 179] press a lot of weight there by means of that pin, without opening the valves, and then we turn to the right and open it after we have effected a new seat that does not leak.

Q. What do the dotted lines indicate?

A. That indicates a hole through the mandrel. You see, that is not shown in detail. It doesn't show this plunger in here or pressure cylinder. It doesn't show the whole detail. We have a much better drawing for explaining the operation of this because this doesn't show all of the details.

Q. In the middle figure the valves are shown in open condition?

A. Yes, your Honor.

Q. That is when the product, or whatever you are getting from the "rat-hole," goes up into the—what you *you* call it?

A. Into the drill pipe; yes, sir.

Q. Into the drill pipe?

A. Yes, sir.

Q. How do they get past those valves?

A. The valve is moved from the seat and its passes through the seat around the valve stem and up through ports drilled in the valve seat member for that purpose.

Q. Wait a minute. I don't understand that. It passes around the stem of the valve? Would you call that the stem of the valve?

A. Yes, your Honor. You see, this white line here shows no metal. In other words, that is a hole. Now, you see over in the first figure the red valve is right up against the seat. In the center part you will see the red valve is shoved down [fol. 180] away from the black seat, leaving an opening surrounding the stem so the fluid can pass through it.

Q. What does the black indicate?

A. The black indicates the seat while the red indicates the valve that fits the seat.

Q. The seat being steel, solid steel, is it?

A. I think we make those out of bronze; any good metal.

Q. At any rate, solid metal?

A. Yes, sir.

Q. Trace the course of the fluid that you are getting as it goes up that valve again. You did that before but I didn't quite follow it.

A. I will just draw a line.

Q. I wouldn't do that.

A. Well, it comes up through and in here and then it passes around this seat and right in between that black and the red, and up through holes drilled through this seat member into the bottom part of the seat, only the lower portion of it is ground to fit this valve.

Q. Where do those openings open?

A. They open in the chamber immediately under the upper valve.

Q. Around and in contact with that spring?

A. Yes; in contact with that spring.

Q. I would think that obstructions would get into the coils of the spring and prevent its functioning.

A. No, your Honor. Those springs are very satisfactory. In other words, any mud that would get in between the springs would be squeezed out as it was shoved down. And [fol. 181] it is compressed to open the valve and then it comes back to its normal shape, closing the valve. Those springs will hold a little over a hundred pounds, so that they will retain the sample of fluid when the pipe is pulled out of the top of the well.

Q. Continue with your explanation.

A. Then the fluid passes around this upper valve the same as it did the center valve, that is, between the valve and the seat, and up through the openings and into holes drilled into a member screwed onto the end of the mandrel

and follows up through the center of the mandrel and into the drill pipe.

Q. Are those two diagonal marks the holes you referred to?

A. Yes, your Honor. There are four holes, I believe, drilled into that member that is threaded onto the mandrel, leaving a solid place in the center to strike the valve. In other words, the fluid goes into those diagonal holes and into the center. If we had drilled a hole straight through, when the mandrel came down and struck the valve it would close up the hole so the fluid couldn't get in it. So we drilled diagonal holes and left sufficient material in the center to press the valve open. Those valves are nearly 2 inches across perhaps, or more, and you will have 3,000 pounds pressure per square inch holding that valve closed. So you have to let enough weight down there to press the valve open against that hydrostatic pressure.

Q. What does the blue indicate?

A. That indicates the mandrel and the member screwed on the end of the mandrel to open the valve.

[fol. 182] Mr. Boyken: We would like to offer the diagrammatic sketch in evidence in connection with the testimony of the witness and ask that it be marked the defendants' exhibit next in order.

The Court: Very well.

The Clerk: Defendants' Exhibit B.

Mr. Boyken: We also offer in evidence the blueprint identified by the witness and ask that it be marked Defendants' Exhibit C.

The Court: Very well.

The Clerk: Defendants' Exhibit C.

(Book of Exhibits, p. 315.)

Mr. Boyken: I am going to consider the Simmons patent briefly. Have you a copy of the Simmons patent at hand?

The Court: I have two copies here.

By Mr. Boyken:

Q. First, Mr. Halliburton, I call your attention to the use of the word "casing" in several places in the specification. For instance, if you will look on page 2, line 62, it says, "A casing 23." I am going to ask you if that really is

a casing 23 or is that a mistake. I haven't been able to make up my mind about that.

A. It says, "A casing 23 or other means adapted to provide an empty chamber or conduit which may be lowered into a well bore and, when so lowered, provide an empty chamber adjacent the formation to be tested." That could [fol. 183] be any other string of pipe, tubing or drill pipe or casing.

Q. A casing is a definite thing, isn't it, in the well drilling art?

A. Well, of course,—

Mr. L. S. Lyon: Are you asking as to how the term is used in the patent or how it is used somewhere else?

Mr. Boyken: Right now I am asking if a casing is a definite thing but I will ask your question in a moment.

A. Well, after it is installed in the well as casing I would say it is a definite thing but I have seen line pipe, what is commonly termed line pipe, run in as casing, and I have seen drill pipe used as casing. So, really, the term "casing", broadly speaking, is a pipe that is permanently installed in a well.

Q. Suppose we turn to the drawing and look at Figure 1. Up at the top of Figure 1 you will see the number 23. Now, 23 is not really the casing, is it?

A. 23 is the empty conduit.

Q. It is a drill pipe, isn't it?

A. It is drill pipe; yes. But, after all, suppose you substituted a string of tubing for drill pipe. Then it would be a string of tubing.

Q. Would it be a string of casing?

A. It would be if you set it as a string of casing.

Q. Then, you think that the term "casing" is properly used at that place, do you?

A. I think, in the light of the specification, that term is all right.

[fol. 184] Q. I also call your attention to the same use on the same page, that is, page 2, line 68, and page 3, line 46. Do you see where it says "a casing 23," in both of those cases?

A. Yes. It says, "In the preferred form of the invention where this member comprises a casing 23, there will thus be provided an empty chamber or conduit extending from

the formation to be tested up to the top of the well hole." Of course, it actually means a string of pipe.

Q. It means drill pipe?

A. Well, not necessarily drill pipe. I wouldn't limit the use of this patent to a drill pipe. In other words, any equivalent of drill pipe may be used. We have used tubing to drill with.

Q. But don't you believe that the word "casing" is a misuse of that word as you know casing in the well-drilling art?

A. No.

Q. You don't think so?

A. I think the specifications are very definite and can be readily understood by anyone familiar with the art.

Q. That isn't what I asked you. I asked you if the word "casing" was properly used in this connection.

A. I think it is properly used. I think that anyone can read this and understand it.

Q. You were reading a portion from the end of page 1 to the top of page 2. Just continue that, where it says, "whereby—" or I will read it for you. I am reading from page 2, line 2. "in certain cases when the cognate fluids of the formation are under sufficient pressure, the [fol. 185] well may commence producing through this conduit." What does that mean?

A. That means whatever you are using as a test string, as explained in the balance of the patent.

Q. Suppose we have a string of pipe, with one of your testing tools at the bottom, and we have the valve open, how can that well commence producing through that drill pipe?

A. What is meant by that term is that it might flow out of the top of the well.

Q. Do you mean the fluid from the bottom of the well would flow upward through the testing device and then continue flowing upward through the drill pipe and out of the top of the well?

A. Yes. That is what this is, a method of making a production test, a productivity test. That is what the invention is all about.

Q. And in such a case the fluid, whatever it is, actually comes out of the top of the well hole?

A. If it is under sufficient pressure, it will; yes; and you don't close the valve at the top.

Q. And under those conditions you would have a producing well?

A. Well, it wouldn't be on production in the sense that it was a producing well. You only do that to test it. You wouldn't set it there as a permanent thing.

Q. But you would have a producing well in so far as the fluid came over and out of the top?

A. You would be making a production test.

Q. I notice in certain of the claims the expression is used, for instance, in claim 9 which has been referred to here, at [fol. 186] the end of the patent, on page 4, line 81, "a packer adapted to be positively pressed against the walls of the formation." We know what a packer is but tell us how it is positively pressed against the walls of the formation.

A. I don't understand that you could very well set one in on the formation to hold it up and to hold the fluid back without positively pressing it against the formation.

Q. What do you mean by "formation"?

A. I mean that shoulder on the "rat-hole" where you would set it. If it happened to be used as a wall packer in an open hole, then that would be positively pressed against the formation. I don't understand—if you pressed it against the formation, it would be positively pressed.

The Court: What is that statement? I don't understand what?

A. I don't understand that it could be anything but positively pressed.

By Mr. Boyken:

Q. Suppose we were making a water shut-off test and were packing against the inside of the casing, would you think that in such a case the packer would be positively pressed against the walls of the formation?

A. No; I don't think so.

Q. Do you consider that so-called water shut-off tests, where you pack against the inside of the casing, are covered by the Simmons patent in suit?

A. Yes.

[fol. 187] Q. How do you make that out? How do you reason that?

A. I think that it comes within claim 18.

Q. Claim 18?

A. Yes.

Q. That is a method claim. You have two method claims?

A. Yes.

Q. Claims 8 and 18?

A. Yes.

Q. Let's eliminate those method claims for a moment and I will come to that again. Do you consider that the apparatus claims are readable on water shut-off tests?

A. All those claims that are limited to pressing the packer against the formation wouldn't come within the use of setting a packer within a string of casing, I don't think.

Q. Of the 10 apparatus claims in suit—you are familiar with your own patent here, are you not?

A. Yes.

Q. You know, don't you, that that limitation appears in all of those apparatus claims?

A. I think that they are all limited to that.

Q. That is, to formation tests as distinguished from water shut-off tests?

A. Yes.

Mr. Boyken: I am going to make that clear to your Honor in a few moments.

A. But claims 8 and 18 are not limited to that.

Q. Those are the two method claims?

A. Yes.

[fol. 188] By the Court:

Q. Let me interrupt at this point. Do I understand that you both agree there is any difference between a water shut-off test and any other kind of a test, for gas or oil, for instance?

A. I don't agree that there is any difference, your Honor. The method claims are old. I wouldn't state that the apparatus claims do or do not cover the making of a test where you set the packer within the casing.

Mr. L. S. Lyon: I think, your Honor, that is a question of law. The witness has said that as far as the claims are concerned they include the statement that the packer is pressed against the formation. Now he says, if you set the packer in the pipe in making a water test, you are not pressing it against the formation. I think he has said all

that he can say as far as testimony is concerned and that beyond that is a question of law.

The Court: As I understand this proposition, a water test is made in exactly the same way that any other kind of a test is made, if I understand the proposition correctly. I may be mistaken about that, though. Counsel and the witness seem to have a different opinion.

Mr. Boyken: No, your Honor. Those tests are made differently. And, if I may be permitted at this time, I would like to get the witness' view on that and develop that before we go back to those claims.

The Court: You will have to make clear to me the difference in operation between a water test and an oil test.

A. Your Honor, the steps are exactly the same, identical.

[fol. 189] By Mr. Boyken:

Q. Will you explain the difference between a water shut-off test where you press the packer against the inside of the casing and the formation test where the packer is placed positively against the formation? And in doing so kindly refer to Defendants' Exhibit C.

A. In the drawing marked "Casing test water shut-off" it will be seen that there is illustrated a string of casing that has been cemented in a drilled hole.

Q. Will you run your pencil along the casing on both sides?

A. Yes. Well, the casing is marked.

Q. Please run your pencil along the casing on both sides of the well hole and on the opposite side. Now, where is the drill pipe that we commonly know? That is a different thing, isn't it?

A. The drill pipe is within the casing.

Q. And is it where I am now pointing the pencil, which is marked "Drill pipe"?

A. Yes. But we can't get this pencil into the record.

Q. It says "Drill pipe"?

A. Yes.

Q. That is the drill pipe?

A. Yes.

Q. And the casing is where I am now running my pencil, which is also marked "Casing," is it?

A. Yes. And the casing shoe is shown not to come all the way to the bottom. In drilling out the cement they make

a few feet below the casing shoe. Then in running a tester you use a packer that is set on the bottom joint of the casing and you make a test not only of any fluid that might [fol. 190] leak down back of the casing but also test the formation immediately adjacent and below the shoe of the casing that has been drilled. It is necessary to drill below the shoe in order to make certain that, if any water should come down back of the casing, it can get into the casing. And you also test the producing zone if the casing is set just above the producing zone. If the formation below the shoe contains water, you would secure a production test or a productivity test of that water. And the only difference is that the packer is set in the bottom of the casing rather than against the formation.

Q. Show us where the packer is set in the case of a water shut-off test.

A. The packer is set in the bottom joint of the casing.

Q. Put your pencil there on the left-hand figure of this exhibit.

A. This is not a detailed drawing and doesn't show the joint, but it is set just above the bottom of the well 6 or 8 feet.

Q. Is it set substantially where it says "Hook Wall Casing Packer" on this exhibit?

A. Yes. There is no detailed drawing shows the bottom joint of pipe.

Q. That packer in such a case is set against the interior walls of the casing, is it not?

A. Yes; sealing off the mud fluid above the packer.

Q. So that the packer is not positively pressed against the formation?

A. It is pressed against the casing.

Q. Against the casing?

A. Yes.

[fol. 191] Q. Now, take the formation test which is shown by the third figure from the left-hand side. There you have a packer which is pressed against the formation, do you not?

A. Yes. And so is the second one.

Q. You have your packer pressed against the formation instead of the casing?

A. Yes.

Q. And in the first one, the one to the extreme left, the packer is set against the interior walls of the casing?

A. Yes. You could use the same type of packer in making the casing tests that you could use in making the wall packing tests.

Mr. L. S. Lyon: I think you should explain, if you want to make a formation test without a "rat-hole", that you use a different style of packer, which is the kind that is illustrated in the second sketch.

Mr. Boyken: Yes. I will be glad to develop that.

Q. You say the figure on the left-hand side is a casing test water shut-off?

A. Yes.

Q. The two other figures to the right are both formation tests, one using the wall packer type and the other the cone packer type?

A. Yes.

Q. The cone packer type is what we have been calling the "rat-hole" tester, is it not?

A. Yes.

Q. Will you explain the one that is called the wall packer type? How does that differ in a formation test from the "rat-hole" type? (After recess.) We were considering [fol. 192] the difference between packing off against the inside of a casing and against the formation at the noon recess and you were explaining that situation with respect to Defendants' Exhibit C. Can you tell us, briefly, the difference between packing against the inside of the casing as it is shown in the left-hand view of Exhibit C and packing against the formation either in the middle view or the third view from the left-hand side?

A. There is really no difference in setting a packer. You would use the pipe to set the packer in the same manner and it would depend largely on the kind of a packer that you used. We can take the formation wall packer as shown in the view here and set that in a casing and make a shut-off the same as you can use that same packer to shut off in the wall of the formation. In other words, you really stand a better chance for making a shut-off with the formation wall packer in a casing than you do in the formation itself.

Mr. Boyken: I move to strike out that answer, your Honor. I asked for the difference between these two.

The Court: The answer may stand. State the difference.

By Mr. Boyken:

Q. State the difference between the two.

A. The difference between the two what?

Q. Between packing off against the inside of a casing, as you have shown it in this exhibit, and packing against the formation.

A. I don't know what you mean by the difference in packing off. If you pack off, you have packed off and you [fol. 193] would use a packer. The packer might be of different construction.

Q. Suppose you want to pack off in a casing in order to make a shut-off test, what is the first thing you do after you get your tool in position?

A. To set your packer.

Q. How do you set your tool in packing off? What is the first step you take?

A. It would depend on the type of packer you use.

Q. Suppose you take this view here in Exhibit C, the left-hand view, and explain that type of construction.

A. That is a hook wall packer in which you release slips.

Q. Where are those slips?

A. The slips are shown just below the packer.

Q. Are the slips shown by the line which points to a portion of the packer labeled "Hook wall casing packer"?

A. Yes.

Q. How many of those slips are there?

A. I don't know how many.

Q. How many do you have in yours? This is yours, isn't it?

A. Why, we buy our hook wall packers.

Q. How many do you use when you make a test of this kind?

A. I think they usually have four segments of slips.

Q. And what do you do with the slips?

A. If you use a hook wall packer, you set the slips to set the packer.

Q. You set the slips first?

A. Yes.

[fol. 194] Q. What do you mean by setting the slips?

A. I mean you set the slips to hold the packer as distinguished from an anchor packer in which the anchor holds the packer.

Q. After you set the slips then what is the next thing that is done?

A. The next thing that you would do would be to open your valve after you had set your slips and set your packer.

Q. How do you set your packer?

A. By putting a weight on it the same as you would set any packer.

Q. Then what does that do to the packer? Does it expand the packer against the interior walls of the casing?

A. Well, yes.

Q. Your answer is yes? Isn't that the answer?

A. Yes.

Q. The packer is expanded against the interior walls of the casing and that packs off what is below the casing from what is above?

A. Yes.

Q. And when it is so packed off then you open the valve, do you?

A. In the testing device; yes.

Q. That is what I am talking about.

A. Yes.

Q. You open the valve?

A. Yes.

Q. And how do you test whether the water is shut off or not there?

A. You don't necessarily test whether the water is shut off. Of course, if water comes into the pipe, you know [fol. 195] that it came from the formation immediately below the casing or came from a leak around it. In either case you would have to shut that water off by a squeezed cement job or a string of casing.

Q. That is what you want to find out, is it?

A. That is one of the purposes of the test, yes.

Q. And the packer is set against the interior walls of the casing in such a test?

A. Yes.

Q. In your formation test—Let us take the third view from the left-hand side—is the packer set against the casing or against the formation?

A. It is set against the formation.

Q. And by "formation" is meant the bare well hole, without any casing inserted, is it?

A. Yes.

Q. How do you positively press that packer against the formation? Is it due to the weight of the drill pipe, in the case of the "rat-hole" packer?

A. If you set the packer in against the formation and add weight to it you certainly press it against the formation.

(Question read, at the Court's request.)

A. By allowing a portion of the weight of the drill pipe to press the packer down after it comes in contact with the formation.

Q. There are no slips used in that case, as in the case of the packer set against the interior of the casing, are there?

A. No.

The Court: I am not clear on what is meant by "slips," although I believe the witness explained it.

[fol. 196] By Mr. Boyken:

Q. Well, let us go back to the casing type of packer. You insert your equipment in the casing?

A. Yes.

Q. And in order to make a test to find out whether there is any water below the point of the casing you want to set your packer in the casing above the lower portion of the casing; is that it?

A. Yes.

Q. Now, you have your equipment set, but there is still a space inside for the liquid below to rise to the top, because it has not been packed off?

A. Yes.

Q. How do you pack off this casing there so as to make a seal, let us call it, between what is below and what is above the packer? What is the first thing you do?

A. Well, if you use—

Q. Well, let's use this, what you have right here in this drawing.

A. Well, to do that you set the slip which carries the weight of the drill pipe, and after the slip has been set you add weight to the pipe, the weight of the pipe to the packer; to expand the rings out against the wall of the casing. If you use an anchor packer, such as the packer over here, instead of setting the slip the anchor strikes the bottom

of the well, and the weight is added to the packer and you expand it.

[fol. 197] Q. Well, please confine yourself now to the left-hand view. Let us get that settled. I want to first know what these slips are and what their function is.

A. You want me to distinguish the difference between an anchor packer and a hook wall packer, or how an anchor packer is operated?

The Court: No. I guess counsel wants to know the same thing that I do, what a slip is.

A. A hook wall packer has a slip——

The Court: I know, but I don't know what a slip is.

A. Well, a slip, there are segments that are wedge-shaped that can be set in the casing to carry the weight of the pipe above. We will take a tubing test that has——

The Court: What is the slip made of?

A. They are made of steel.

By Mr. Boyken:

Q. Sort of fingers that expand in order to obtain an anchorage in the casing; is that it?

A. No, not fingers at all.

Q. What are they, then?

A. They are circular wedge-shaped steel members made in segments that come to the wall of the casing, and fasten in such a manner that they can be wedged up and carry the weight of the casing.

The Court: The weight of the casing rests upon these slips?

A. The weight of the drill pipe, your Honor.

The Court: I mean, the weight of the drill pipe rests upon these slips, and that weight then will be transmitted no further?

A. Yes. It will hold up the weight of the drill pipe.

[fol. 198] The Court: Yes.

Mr. L. S. Lyon: Your Honor understands that these different types of packers were used in the oil business commonly before this invention?

The Court: Yes.

Mr. L. S. Lyon: Both the hook wall type and the "rat-hole" type. Both of them were common implements used in the industry.

The Court: Yes.

Mr. L. S. Lyon: So the question that is being asked now as to the operation of a packer has to do with the packer itself rather than anything to do with anything that is new in this invention.

By Mr. Boyken:

Q. Now I show you a model and ask you to point out these hooks that you spoke about. Are they the ones I have my pencil on?

A. Those are the slips.

Q. I mean the slips. Are those the slips?

A. Yes.

Mr. L. S. Lyon: Suppose you demonstrate to the Court how you set one of those small packers.

A. Yes. Your Honor, these springs here are compressed so that when you set it in the casing you can turn the upper portion without turning this lower portion, which makes it possible to release the slips so that they will come up and engage the casing.

Mr. L. S. Lyon: Can you release that? That is what you call tripping one of those wall packers, is it?

A. Now, it is released and shoved up to where it engages the casing, and with those teeth on there it holds in the casing, so that you can hold the weight up, so that you can lower the drill pipe away and expand the packer.

[fol. 199] By Mr. Boyken:

Q. It is a sort of an anchorage?

A. Yes. This is an Olympic casing packer. That is the same people that the Halliburton people buy their packers from.

The Court: Well, would you say that these rough projections that make an anchorage against the side of the casing are what we have been calling slips?

A. Yes, your Honor.

By Mr. Boyken:

Q. Where is the so-called packer portion in the model you hold?

A. The packer portion is the black rings.

Q. These four black rings at the top of the model?

A. Yes.

Q. And are these four black rings expanded so that there is a seat at that point in the casing?

A. Yes.

By Mr. L. S. Lyon:

Q. By the weight?

A. By the weight of the pipe.

By Mr. Boyken:

Q. The weight of the pipe pressing downward expands these four black members and there is a seat at that point?

A. Yes.

Q. That is a common way of packing in a casing isn't it?

A. That is one way. But you can take the same rings with an anchor packer and when the anchor strikes the bottom of the well the weight can be applied to the packing to expand it out against the wall of the casing.

[fol. 200] Q. At any rate, the model that you have there substantially shows the matter which you have drawn on Defendants' Exhibit C?

A. Yes.

Q. When you pack against the formation—or let us take the “rat-hole” form of packer. Of course, you dispense with these slips and all of these other matters that are on this exhibit, except that you still have the packer?

A. Yes.

Q. So that there is a difference between packing off inside of a casing, as it is shown here, and the so-called formation packing off, with the “rat-hole” packer?

A. Well, with the “rat-hole” packer, yes, but with the wall packer there is no difference.

Q. And the wall packer is this one that is the second view from the left-hand side?

A. Yes.

Q. You don't have any slips there, of course?

A. Not with the anchor wall packer.

Q. You don't make any water shut-off tests with the wall packer, do you?

A. Yes; sometimes we do.

Q. Aren't they nearly all made by packing off in a casing?

A. It would all depend on how much hole you had below the casing. You wouldn't want to place too much weight on the anchor. But we do make tests right along with sub-

stantially the same packer inside of the casing that we use to make a wall packer formation shut-off.

Q. But in that case the packing is done against the formation rather than against the interior of the casing?

A. No. Sometimes it is done right against the casing.

[fol. 201] Q. When you are making a casing test you pack off against the interior of the casing, do you not?

A. Yes. But the operation of the device would be exactly the same whether it was in the casing or out of the casing.

Q. I didn't ask you that. I asked you a simple question there and I will ask it again. When you are packing off against the inside of a casing the packer presses against the interior of the casing in order to shut off the water below from above?

A. Yes.

Q. And when you are making a formation test you pack off against the formation instead of the casing, is that correct?

A. Yes. But the operation of the device would be the same.

Q. You couldn't make a casing test by using that "rat-hole" packer and by packing off in the interior of the casing, could you?

A. You couldn't pack off in the casing; no.

Q. Let's get back to the patent. You told us this morning that you did not believe any of these apparatus claims covered the packing against the casing, and you said that the method claims did.

Mr. L. S. Lyon: I object to that. He didn't say that.

Mr. Boyken: I so understood the witness.

The Court: Finish the question but don't answer it until there is an opportunity to object. Read the question as far as it has gone.

(Question read by the reporter.)

[fol. 202] By Mr. Boyken:

Q. Will you explain how the method claims cover packing off against the interior of the casing as distinguished from packing off against the formation?

A. The apparatus claims do not cover any method of testing a well. They cover the apparatus which you use to test the well. To manufacture the apparatus that you

use to test a casing for a water shut-off will infringe the patent as readily as the same apparatus manufactured to test a formation will infringe the patent. The patent does not necessarily not be infringed by manufacturing and using—

Mr. L. S. Lyon: Are you referring now to the apparatus claims?

A. I am referring to the apparatus claims. You will infringe the apparatus claims if you manufacture an apparatus that comes within the scope of those claims, though you might use that apparatus to do something else with it.

By Mr. Boyken:

Q. Packing off a casing, for instance?

A. Yes; certainly. If you manufactured it to pack off in accordance with the claims, and you used it to pack off in the casing, I would say that you infringed the claims.

Q. You have changed your mind in that respect since this morning, haven't you?

A. I think my testimony is very clear on that. You asked me if in using it would I infringe.

Q. I want to call your attention to claim 9 as a typical apparatus claim, the one that you previously referred to. As one element there it says, "carrying a packer adapted to be positively pressed against the walls of the formation." [fol. 203] In the case of a casing test how does that language, "positively pressed against the walls of the formation," apply to packing off in a casing?

A. If you manufactured an apparatus with a packer that would or could be used to press against the casing or the formation, you would infringe that claim.

Q. That isn't my question, Mr. Halliburton. I am going to read you an element of claim 9, namely, "a packer adapted to be positively pressed against the walls of the formation." How can that be readable on a packer that packs against the interior of a casing?

A. Don't you think that where that is capable of expanding against the casing it would be capable of expanding against the formation and packing off the formation?

Q. What does the word "positively" in that claim signify to you?

A. It would signify it was so pressed against the formation that it would keep the fluid from passing out.

Q: The rest of the sentence is, "pressed against the walls of the formation." Now, doesn't the word "positively" have some significance to you?

The Court: Is there any place where the word "positively" is left out?

Mr. Boyken: I don't know of any place where it is left out in the apparatus claims. It appears in every one of the apparatus claims in suit.

A. The only significance I can see is that it is just positively pressed. The word "positively," as I understand it, means to positively do a certain thing and in this particular instance it says "pressed against the formation."

[fol. 204] Q. Doesn't it mean "surely" or something of that kind?

A. I guess you could say "surely."

The Court: What is that word you are using?

Mr. Boyken: Surely. "Certainly pressed" is another one.

By the Court:

Q. Does it mean forcibly pressed or effectively pressed?

A. I think those terms would be just as effective and would mean substantially the same thing.

The Court: It splits the infinitive pretty badly but that is not a mechanical difficulty, I suppose. That word, however, is often found in patents, is it not, that is, "positively"? I never did know exactly what it meant in patents.

By Mr. Boyken:

Q. What does the word "positively" mean as it appears in these claims, where it says "positively pressed against the walls of the formation"?

A. Well, it means the adding of weight and expanding the packer against the formation to be packed off, expanding it. In other words, it was an additional weight for the purpose of expanding the packer or pressing the packer against the formation. There was some question as to whether or not the packer, a cone packer, could be pressed or expanded against the formation, and so the words "positively pressed against the formation" were inserted in the claim.

Q. You were there in the Patent Office, I understand, and your application stood rejected on all those claims except the two method claims; isn't that correct? Do you remember that?

[fol. 205] A. We had a conference, I remember a conference with the Examiner, in which we inserted that word in the claims, but I do not remember that it was rejected.

Mr. L. S. Lyon: Maybe Mr. Halliburton could look at the file wrapper and he would remember about it.

The Court: Is the file wrapper on the patent itself in evidence?

Mr. L. S. Lyon: Yes, your Honor.

The Court: And is the file wrapper on this second device in evidence?

Mr. L. S. Lyon: Yes; that is in evidence. We have the file wrapper of the patent in suit here.

The Court: That is in evidence, as I understand it.

By Mr. Boyken:

Q. All right. I will hand you the file wrapper of the Simmons patent in suit and ask you to turn to the very last rejection just before the patent issued. Now, that is dated December 4, 1929. It is toward the end of that file wrapper, where the Halliday two patents are cited and all the apparatus claims here in suit are rejected. It is paper No. 19.

A. I don't see anything in paper 19 that would indicate that that kind of a limitation was—

Q. No, Mr. Halliburton, not paper 19. Paper 19 was the rejection of all the apparatus claims here in suit on two patents to Halliday. Then in paper No. 20, which is the following one, the limitation that I speak of, "positively pressed against the walls of the formation", was inserted in all these application claims, in order to permit them to issue. Do you see that?

A. Yes.

[fol. 206] Q. That amendment and argument was put in there after your interview with the Examiner; was it not?

A. The rejected claims had been amended pursuant to an interview with the Examiner having charge of this application. This had been done to facilitate the consideration of the case and to place the claims in better form. "It is not admitted by applicant that the Halliday patents, cited in the last official action, disclose the invention or meet the

rejected claims. These patents both disclose means for cleaning out perforations in a well casing."

"The Court: Wait a moment. I think the witness can answer the question without reading the claims. He is asked if the word "positively"——

Mr. Boyken: "positively pressed against the walls of the formation.

The Court: If that expression was not put in in response, or, rather, after the Examiner had refused to allow the claims. That is the purport of the question, isn't it.

Mr. Boyken: Yes, your Honor.

The Court: He can certainly answer that yes or no, because he was there and handled the whole business.

Mr. L. S. Lyon: I know, but he is referring now to the very document itself, your Honor.

The Court: He may refer to it, yes, but he must answer the question, because it isn't necessary, I think, to read what is written there in order to answer that question.

Mr. L. S. Lyon: The question is susceptible of misunderstanding, or the answer is, to it. What the witness wants to point out is that, while these words were added following that interview, that they were added for a totally different [fol. 207] reason, and that the statement was made in adding them that they were not added because of the rejection of any prior art.

The Court: Read the question, Mr. Reporter.

(Question read by the reporter.)"

The Court: Now answer that question yes or no.

A. Yes.

The Court: All right. Now you may make whatever explanation you want to.

A. The law examiner had cited a patent that had some packing elements that moved up and down in the casing, and he wanted to distinguish these claims from that packing element, a piston that moved up and down, so positively pressing; in other words, press in such a manner as to seal off without moving, in other words, to distinguish this from the device where the packing element worked as a piston in this cleaning device to shove fluid in and out through the perforations.

By Mr. Boyken:

Q. Now, Mr. Halliburton, after you inserted that phrase in all the apparatus claims here in suit the patent was allowed, was it not?

A. No. It was a long time before it was allowed.

Mr. L. S. Lyon: There was another interference.

By Mr. Boyken:

Q. There was no further action of the Patent Office or no further amendments? I thought you were familiar with this file wrapper, Mr. Halliburton. There were no further amendments or no further actions of the Patent Office?

A. There were actions. The claims were allowed after that, but there were a lot of actions in the Patent Office after that.

[fol. 208] Mr. L. S. Lyon: There were hearings in the Patent Office on the patentability of this matter in the Edwards interference. There was the decision of the Board of Appeals, which I offered in evidence. All of that came after this incident.

The Court: Well, the question is, of course, if the claims were allowed after this amendment was made, which literally is true, of course.

Mr. L. S. Lyon: Yes.

The Court: Probably that wouldn't tell the whole story, yet that is the fact.

Mr. Boyken: Well, I want to tell the whole story, your Honor.

The Court: Very well.

By Mr. Boyken:

Q. Was there anything further done to these claims between the date this phrase was added to those apparatus claims and the time they issued in the form of a patent? Were any further amendments made to the claims?

The Court: Do you know, Mr. Halliburton?

A. I don't remember, your Honor. I remember that we cancelled one claim and added another claim.

By Mr. Boyken:

Q. Aren't you familiar with the prosecution of this application?

Mr. L. S. Lyon: It only lasted seven years, and to ask him what happened I think——

The Court: It is like the trial of Warren Hastings, and even then the House of Lords disagreed, I believe. You have finished that. Go on.

[fol. 209] By Mr. Boyken:

Q. You spoke about these interferences. The Simmons patent here in suit is in interference at the present time, isn't it?

A. Yes.

Q. With whom is it in interference?

Mr. L. S. Lyon: I object to that as not the best evidence, your Honor. It is not in interference on any of the claims involved in this case, and if there is going to be any question about an interference in regard to some other claims that are not here involved, the interference records should be produced.

Mr. Boyken: I have them here, your Honor.

The Court: Just what is the importance of that in this litigation?

Mr. Boyken: The importance of it in this litigation is that the right of Mr. Simmons to have a patent in the way this patent is issued is now being questioned and being contested. Somebody else claims the right to make these claims, rather than Mr. Simmons, in that patent.

The Court: You say they are now being contested?

Mr. L. S. Lyon: Not these claims.

Mr. Boyken: Yes, your Honor.

Mr. L. S. Lyon: Not these claims, Mr. Boyken.

Mr. Boyken: These claims.

The Court: Do I correctly understand you that that is being done in the present suit?

Mr. Boyken: No, your Honor. There is a suit filed in the Supreme Court of the District of Columbia by Charles R. Edwards against John T. Simmons, Mr. Halliburton and others, and that suit is one to compel the issuance of a patent to Mr. Edwards as against——

[fol. 210] The Court: The present patent?

Mr. Boyken: Yes, the present patent. Not all of the claims of the present patent, I don't believe, but many of the claims of the present patent. Mr. Edwards has filed a suit there claiming that the claims should go to him rather

than to someone else in the patent. I have a certified copy of the proceedings.

The Court: Well, assuming so, would that not mean merely that Mr. Edwards ought to be an intervenor here or be a party here?

Mr. L. S. Lyon: If your Honor please, as far as Mr. Edwards is concerned, before the patent was granted to Mr. Simmons the interference contest was heard in the Patent Office between Edwards and Mr. Halliburton, and decided against Mr. Edwards by the Board of Appeals of the Patent Office, and then the patent was issued to Simmons, and Mr. Edwards filed a suit in the nature of an appeal in the District of Columbia, and has never brought that suit on for trial, but he appeared as a witness and with his other witnesses before Judge Bryant, and we tried out the question before Judge Bryant of whether Mr. Edwards was the first inventor, tried it over again, the same question that we had had decided in the Patent Office, and Judge Bryant decided it the same way that the Patent Office decided it. I understood from Mr. Boyken that they were not going to rely on any claim in this case that Mr. Edwards was the inventor.

The Court: Let me ask this. Were there not pleadings in the Texas case to which the evidence was responsive?

Mr. L. S. Lyon: Yes.

The Court: Are there such pleadings here?

[fol. 211] Mr. L. S. Lyon: Yes, in this case, but I understood that Mr. Boyken was not going to rely on that defense. If he wants to, that is all right with me, but I don't understand that you intend to offer any proof here that Mr. Edwards was the prior inventor.

Mr. Boyken: I would like to explain this situation. There was an interference in the Patent Office between Simmons and Edwards relative to who was the first inventor. That interference was won by Edwards, and it was decided that Edwards, and not Simmons, was the first inventor. Then there was an appeal taken, and the Board of Appeals reversed the lower tribunal and decided that Simmons, rather than Edwards, was entitled to these claims. So there was a decision each way in the Patent Office. Now Mr. Edwards has filed a suit in the Supreme Court of the District of Columbia, and the suit is between himself and Simmons and Halliburton, and he is now claiming in that suit, which is untried—

Mr. L. S. Lyon: No, it isn't on trial.

Mr. Boyken: No. It is untried, I said. It is pending. It hasn't been disposed of. In that suit Edwards claims that he is entitled to all of the claims of the patent that are here in issue, so that the right of Simmons to have this patent is now being contested by a suit. That is all I intend to show. I don't intend to bring in all the testimony that Edwards might bring in in that Washington, D. C., suit.

The Court: Well, that is the situation, is it?

Mr. L. S. Lyon: How can counsel go so far afield and claim that that is admissible, the fact that Edwards filed that suit in the District of Columbia after he had lost in the Patent Office, and we be denied the right to bring in the [fol. 212] Texas record, where that very issue was decided by the Texas court since Edwards filed that suit in the District of Columbia? Counsel objected the other day to our bringing in the decision from the Texas case, and now he wants to bring in here, not a decision, but the fact that a bill of complaint has been filed.

The Court: Is that decision final in Texas?

Mr. L. S. Lyon: It is final so far as the District Court is concerned in Texas.

Mr. Boyken: There was an interlocutory decree filed there. That was a different issue altogether than the issue in this case.

The Court: What are the pleadings here on behalf of Edwards?

Mr. Boyken: He is not a party to this case.

The Court: He is not a party to this case?

Mr. Boyken: He is not a party to this case, but he has been pleaded in the answer as a prior inventor.

Mr. L. S. Lyon: I contend that the fact that he filed that suit after he lost in the Patent Office is not admissible here at all.

The Court: I would think that is irrelevant matter here, the fact that he may have filed a suit somewhere setting forth the same claims that are set forth here, that the defendant here sets forth. That is all it amounts to, isn't it?

Mr. Boyken: That the plaintiff.

The Court: In other words, it is a showing that Edwards, in his own right, begins a suit in the District of Columbia wherein he asserts in his own behalf and for his own benefit that what the defendant asserts here is true?

[fol. 213] Mr. Boyken: I don't think it is quite that way, your Honor.

The Court: Well, he not being a party to the present action, the ruling will be that the evidence relative to the suit in the District of Columbia is inadmissible. So ordered. An exception to the defendant. Go ahead.

By Mr. Boyken:

Q. I understood in your direct testimony that you said that you are also in the oil well cementing business?

A. Yes.

Q. And these stations that you maintain, do they also render service with respect to oil well cementing as well as testing?

A. With the exception of in California.

Q. How is the situation in California?

A. I have a licensee under my cementing patent in California.

Q. What proportion of your business here in California relates to oil well cementing, as against oil well testing?

A. Well, we sell special cementing equipment, multiple stage cementing devices, and full hole cementing devices, and cement lined screen pipe, and measuring devices, and other oil field tools which the Halliburton Oil Well Cementing Company manufactures.

Q. The question is, what proportion is testing and what proportion is oil well cementing and tools?

A. Well—

Mr. L. S. Lyon: He doesn't do any oil well cementing in California.

[fol. 214] Mr. Boyken: I am trying to find out what the fact is.

A: We don't cement wells here, only through our licensee.

The Court: Answer the question, Mr. Halliburton.

A. We are not actually engaged in contracting and cementing of wells in California.

By Mr. Boyken:

Q. You only do testing here in California?

A. Yes, and the sale of supplies which we manufacture.

Q. You stated yesterday, I believe, that you charged \$200 for a test?

A. Yes.

Q. Have you always charged \$200 for a test?

A. We have varied the price, depending on the kind of job. We just recently established a fixed price, rental price, for our tool, regardless of the type or kind of test.

Q. And that is \$200?

A. Yes.

Q. When was that price established? You said just recently.

A. It became effective here on November 1st.

Q. Prior to that time what was the charge?

A. I believe for certain types of tests we made a rental charge of \$200, and for certain other types of tests we made a rental charge of \$150, or \$160 less a \$10 discount.

[fol. 215] Q. So that recently the price was raised and standardized?

A. Yes.

Q. You mentioned some 7500 tests. Can you tell us about how many of those were made in California?

A. No, I couldn't tell you just about how many were made in California. Of course most of them were made outside of the State of California.

Q. What would be your estimate as to the number of tests that were made here in California since you first commenced to operate here?

A. Well, it would be a wild guess. I guess perhaps 500 tests, or maybe more or less.

Q. About 500 tests?

A. Yes.

Q. Of the approximate 500 tests, how many were formation tests and how many water shut-off tests?

A. I think about 65 per cent of them have been formation tests and about 35 per cent water tests.

Q. With respect to the Simmons patent here in litigation, I understand your position to be that you are of the opinion that the Simmons patent covers any kind of a valve that might be used?

Mr. Richmond: I object to that question as indefinite, your Honor.

A. Any kind of a valve associated with what other elements?

By Mr. Boyken:

Q. I understand your position to be that the Simmons patent in suit here covers any kind of a valve that may be

[fol. 216] used in connection with the other elements of the patent. Is that correct?

A. Any valve that would operate to positively open and close, to admit a sample.

Q. Well, is this Simmons patent limited to certain valves, in your opinion, or not limited to any certain valves?

A. It is not limited to any certain valve.

Q. It is not limited to any certain valve?

A. No.

Q. In your opinion is the Simmons patent here in suit limited to any particular kind of drill pipe or casing?

A. No.

Q. Any particular kind of packer?

A. No.

Q. Is it limited to any particular kind of fluid which is adapted to flow through the device?

A. No.

Q. And it doesn't make any difference whether it is a flow test or just an ordinary test where the fluid does not flow over the top?

A. Any test that will come within the claims of the patent will infringe, and any apparatus that comes within the apparatus claims will infringe.

Q. Do you feel that your "J" tool described here today also comes within the description of the Simmons patent?

A. It is embodied in the Simmons patent, yes.

Q. And you consider those valves that are shown in the "J" tool to be valves that are included in the Simmons patent?

[fol. 217] A. The Simmons patent doesn't specify any particular valve.

Q. It shows one kind of a valve, though, doesn't it?

A. Yes, but the claim doesn't necessarily call for any particular kind of a valve, as the patent itself states.

Q. I am not asking you that. I am asking you if it shows any particular kind of a valve.

Mr. L. S. Lyon: That word "shows"—I think the witness is entitled to state what he means by his answer.

The Court: Well, whether it shows any particular kind of valve, I would say that it does.

The Witness: The drawing shows—

The Court: Just a moment. It shows a particular kind of valve, concerning which I think I opened the proceedings

today with an inquiry as to just what the valve was. The Simmons patent shows that valve to the exclusion of any other kind of valve. It doesn't claim that valve, however, to the exclusion of others.

Mr. L. S. Lyon: And the patent expressly states that it contemplates the use of other substituted valves.

The Court: Yes; that is true. However, the witness may be fully examined regarding the valve that is shown in the patent.

Mr. Boyken: I don't intend to go over that again, your Honor. I just want to get the simple question whether the patent shows and describes any particular kind of valve.

A. It shows one type of valve that may be used with the Simmons invention.

Q. In your opinion does it make any difference what the fluid is in the well?

A. No, it doesn't make any difference what the fluid is.

[fol. 218] Redirect examination.

By Mr. L. S. Lyon:

Q. You referred on cross-examination to the various packers shown on Exhibit C, which included a wall packer and an anchor packer and a "rat-hole" packer. Were each of those types of packers in common use in the oil fields prior to 1926?

A. I never saw a cone packer prior to that time but the anchor packer and the hook wall packer and many other types of packers were used prior to that time.

Q. And operated just as you show them to be operated in Exhibit C?

A. Yes; and in other ways, too.

Q. In other words, in following the directions of the Simmons patent to use a packer, in using the kind shown in Exhibit C or the anchor packer and the hook wall packer, you were using types of packers that were commonly used prior to the making of the Simmons invention in 1926, is that correct?

A. Yes.

Mr. L. S. Lyon: The plaintiffs rest, your Honor.

The Court: So far as the infringement goes, Mr. Lyon, you are depending upon the interrogatories to show that, is that correct?

Mr. L. S. Lyon: Yes, your Honor. The defendants, and I think Mr. Boyken will confirm that, admit the use of the tools and the methods described in the answers to the interrogatories.

Mr. Boyken: Yes. There is no question about that, your Honor. And when we present our case we will fully show the structure and mode of operation of the accused device. We have a good model that will show the complete operation of what is alleged to be an infringement.

[fol. 219] FRANK E. O'NEILL, called as a witness on behalf of defendants, being first duly sworn, testified as follows:

My name is Frank E. O'Neill. I reside in Glendale, California. I have lived around the Los Angeles Basin since about 1927. I am by business or profession a petroleum engineer, and at the present time am secretary and treasurer of the M. O. Johnston Oil Field Service Corporation, one of the defendants herein. I have been connected with that corporation since March, 1933. Prior to March, 1933, I was doing petroleum engineering work in the oil fields from the time I left college in 1920 and practically up to 1933 for the Pacific Oil Company, the Pan American Petroleum Company, the Petroleum Securities Company and the Superior Oil Company, and I was on a tax research bureau for the State of California for a short time, and other just temporary jobs until I went into this work with Mr. Johnston. The character and nature of my work with these various oil concerns was primarily, field engineering work, following the drilling of wells and picking out shut-off points, places where we should cement casing and keeping track of the cores, with the idea of picking out the finishing point of a well so that we might keep out of water; general petroleum engineering work with drilling and development.

I have an A. B. degree from the University of Richmond in Virginia. Then I went to the Colorado School of Mines and stayed there until the war broke out. I was there two years. Then, while I was in the service, I had the opportunity of attending Cambridge University in England for a matter of one term. Then I came back and graduated

[fol. 220] from the University of California in petroleum engineering.

When I went to work in March, 1933, for the M. O. Johnston Oil Fields Service Corporation, one of the defendants herein, that company was engaged in the business of testing drilling wells and making shut-off tests and making formation tests, and the company has continued in that line of work to the present time. Upon my coming in contact with the work of M. O. Johnston Oil Field Service Corporation, that organization was very small and my part was to try to get some business and if necessary to run the tools, which was necessary many times; my part was to try to sell business and then help do the work also. I have actually made tests with the Johnston formation tester, and also shut-off tests and casing tests; I would say approximately a hundred tests altogether. All of these tests made by me were made in the state of California. The defendant Johnston Company in this suit does not at the present time operate outside of the state of California. For a short period of time in 1935 the company operated in New Mexico and West Texas, but after the decision in the Texas suit the company moved out of that territory and brought its tools back to California. The Johnston Corporation only made 20 or 25 tests in New Mexico and West Texas during its operations there.

I am familiar with the so-called Johnston device which has been heretofore adverted to in this trial. I have been familiar with it ever since I first went to work with the defendant Johnston Corporation. I have stated that I have run the Johnston device both in formation and in shut-off tests. I think I am familiar with the conditions which ordinarily exist in the oil fields where testing for the purpose of determining whether or not a formation exists from which oil, gas or other substances may be derived. In drilling an oil well by the present best known method, known as the rotary system, the first thing is to put up a derrick to drill with, and the machinery is handled with high-powered steam engines. A string of drill pipe, which is hollow, is provided, and a bit, used to drill with, is placed on the bottom of the drill pipe. The member at the top of the pipe is square instead of round, and that is what is used to rotate the drill pipe to bore the hole with. While that is going on the mud pumps are on the derrick floor and pump mud down through the inside of the drill pipe, out through

the bit, and that brings the mud up, brings it up to get rid of the cuttings, and the mud is then pumped back into the well again. A driller determines whether or not he has reached a stratum, which in his opinion should be tested, in different ways. There are various types of formation, like sticky clays, sticky shales, and then there are hard sands and hard shells, which drill differently. The driller can tell frequently from that that he has had a change of formation. He may take samples from the ditch where the mud drops the cuttings out. Another way to determine the formation is to use core barrels that are run on the bottom of the drill pipe in the place of an actual drilling bit. That core barrel goes down the hole, and it is rotated just as though it were a bit, and it cuts out a round area straight through the formation, a sort of biscuit arrangement, and that is brought out, and you can look at the various formations and, by a study of those core samples, and of the ditch samples, and the way that the formation drills, how badly [fol. 222] a bit is cut—one formation will cut it down worse than others, wear it down more than others—sand wears them very badly—and from a study of those we get some idea as to whether a test would be warranted on the formation that they are drilling in at the time. These evidences which I have spoken about in themselves do not determine the productivity of a particular formation. They simply give evidence which will enable the driller to determine whether or not a test should be made.

I am familiar with the conditions existing prior to the time when formation testers of the type and character that have been spoken of here were introduced. I was acquainted with the prior method of testing formations by bailing. When I came to the Johnston Company, defendant herein, that company had the present devices that they are now using for testing formations and for making water shut-offs. In describing the Johnston device that is shown on the particular diagrammatic chart on the easel, I will state that this is a diagram of the Johnston tool, carrying a packer on the bottom. The first diagram at the left bears the caption, "Going in." That merely shows diagrammatically the position that the valves are in when the tool is being lowered into the hole. The device is attached to the end of the drill pipe; I mean the drill pipe which is ordinarily used up to the time of the test, in drilling the well. The bit is taken off of the drill pipe and the testing

device screwed onto the end of the drill pipe. The drill pipe in the first place is handled by pulleys; we call them traveling blocks, and crown pulleys, in the top of the derrick. The drill pipe is standing back in the derrick. An elevator clamps onto a stand of pipe, which is about 90 feet long, [fol. 223] and the driller picks that up and swings it over the hole and screws it into the tool, or whatever article is going to be used, it is lowered away, and then another stand of pipe is picked up with the elevator and attached to the stand which has just been lowered into the hole. By stands of pipe I mean the usual lengths in which the drill pipe is unscrewed in coming out of the well, which is commonly about 90 feet long. Each stand is added to the other and lowered down into the well slowly through the drilling fluid. Drilling fluid is ordinarily what is known as rotary mud, a slick mud. It is supposed to have something similar to a plastering quality, to hold the walls of the hole up, and somewhat of a lubricating quality, and to be free from sand or particles which would settle down around the pipe and tend to freeze it or stick it in the hole; and when I say "freeze" it, that is the word that is used in the oil fields for sticking a tool in the well. The device attached to the end of the drill pipe is lowered into the well through this fluid or mud. It descends slowly. It is lowered by means of the equipment that I have mentioned, the blocks, and it is lowered reasonably slowly. It is put in fairly fast, though. While being lowered into the well the drill pipe which is located above the device is ordinarily empty. On some occasions fluid, a certain amount, is run in by the pipe.

Describing the Johnston tool, beginning with the top of the device immediately under the drill pipe, the tool is composed of a series of valves. The first valve is known as the trip valve, and as the tools are being made up to go into the hole, where they are going to run the drill stem completely dry, the trip valve is screwed onto the bottom of the [fol. 224] drill pipe. The device that is handed me is the trip valve and the main valve together and the connecting collar that screws onto the drill pipe. This trip valve element is composed of that ball which seats on the seat in the containing member. The trip valve is composed of several portions, a sort of a core here that has these balls set into it, and a sleeve that goes over, and then a plunger with holes through it goes in, and that is part of the plunger there, the

large portion of it that pushes the balls out; and the retaining sleeve is let down on top of the ball and takes a friction hold on the end of the plunger. The retaining sleeve carries a thread, which is threaded into the inside of the encasing member, and with a friction hold against the balls, a retaining portion which holds the plunger in position, which entire member is screwed down by means of the retaining sleeve until the valve ball is seated upon the seat below there in the encasing member. The purpose of the so-called trip valve is as follows: The trip valve cannot be opened by movement of the pipe or by setting the pipe down on a tight place in the hole, that is, a portion of the well that might have been drilled with a bit that was worn out of gage, which would give a narrower, smaller diameter, what we call a tight spot, in the well. If, in running the tool into the well the packer, which we will discuss in a moment, strikes a tight spot or portion of the well which has become bridged over by virtue of the walls caving to a certain extent, it would have no effect on the trip valve. The trip valve is closed before the tool is run in, and can only be opened by an impact from above onto this plunger. The valve which first opens in the device is the main valve. The main valve is shown in the portion of the device which [fol. 225] has been handed to me. That portion of the device which carries the trip valve and the main valve is attached to the other portion of the device which carries the packer and is attached to the end of the drill pipe and is lowered into the well. The purpose of the packer is to seal off the drilling fluid which will be above the point that it is desired to test, in such a manner that the hydrostatic head or pressure of that drilling fluid will not be exerted upon the formation to be tested, and will not dilute the material, the sample, to be taken from the formation. The particular type of packer which is attached to the device which I have before me is known as a "rat-hole" packer. The reason this type of packer is called a "rat-hole" packer is that in drilling, where production is expected to be encountered, the diameter of the well hole is normally reduced. In drilling an oil well, a rather large diameter hole is carried down to a point near where production is expected to be encountered. From that point on a core barrel, probably, or perhaps a small bit is used to drill a small hole down in the center and continue down small until something is found

that is sought to be tested. Normally this smaller hole will be drilled down a couple of hundred feet, and then begin to ream down and bring the larger hole down, and then go ahead with the small hole again and run that down further, and ream it down with a larger bit. Drillers don't like to get too much small hole ahead. It is a little bit bad in case something should happen. The "rat-hole" is the small hole below the large hole. The purpose of making the smaller hole is that it gives a shoulder at the junction of the two holes, a shoulder there, on which to set the packer, or, if casing is going to be set, a shoulder would be required to [fol. 226] set the casing on. It provides a sort of an offset shoulder or saddle. The top of the packer on the testing device is larger than the small hole. This "rat-hole" packer is shown in conical form, being smaller at the bottom than it is at the top, and when placed in the well sets in the top of the small hole. In other words, normally that shoulder is prepared with a reamer so that it will have just about the same taper as the packer. The packer goes down into the "rat-hole", jamming its way into the hole, until it is forcibly seated against it. The purpose of this particular type of packer is that in making a formation test, to shut off the drilling fluid above and any other fluid above the point to be tested, and to make certain that none of the fluid from above can get down into the "rat-hole" where the formation lies. When the packer is lowered into the seat on top of the "rat-hole", then the weight is let down on the packer to press it down on the shoulder, and that may be done several times; it will be spudded down; for instance, the weight will be let down and then picked up, and let down, to work the mud out from under the packer, to get a complete seal. I can illustrate better the seating of the packer upon the "rat-hole" by using this wooden affair, the "rat-hole" being evidenced by one of these apertures in this wooden affair; so that the weight of the drill pipe above it, which extends all the way to the surface, is let down on this packer and presses it down, and then it is worked some to get it down further. And every time that the device is let down, the main valve in the tool opens, by virtue of the compression of this spring and pushing that mandrel through there, that valve comes down off of the [fol. 227] seat by compressing this spring. The opening of this valve permits the fluid to rise past this valve, up to the trip valve.

By the Court:

Q. What fluid?

A. The fluid below the shoulder that we want to test, the fluid in the "rat-hole" below the shoulder, and that will come into the drill pipe, at least up as far as the trip valve.

By Mr. Morgan:

Q. Wait a moment there. When you lower the device into the "rat-hole" and the packer is seated at the top of the formation or "rat-hole," does the fluid which is in the formation, together with what mud there may be there, rise immediately up to the point of this valve which you have just referred to?

A. Up to the trip valve?

Q. No. That is not—

A. Not until this valve here is opened.

Q. But that main valve opens immediately that the seat is made?

A. When you seat this down on the shoulder and give it the necessary weight, it compresses this spring, this mandrel moves down, it pushes the valve down off of the seat, and that permits the fluid that is below here in the "rat-hole" to come through these perforations, up through the packer, up through the equalizing valve, which I will explain to you later, on through this valve, to this point where the trip valve is connected to the string of drill pipe.

When the packer is seated immediately on the top of the formation area, the top of the "rat-hole", the weight of the pipe above the main spring shown here compresses that spring, opens the valve, and the fluid is admitted from the perforated area, the formation area, up through [fol. 228] the packer, through the main valve, which is being held open by this spring and the weight of the pipe, and then up to where the trip valve is located. During all of that time the trip valve remains closed. The trip valve is not opened by reason of any movement of the pipe whatsoever; and by that I mean any movement of the drill pipe. The drill pipe is not rotated to open the trip valve, and the pressure or movement of the pipe vertically does not open the trip valve. No movement of the pipe opens the trip valve. When the main valve is opened by the weight upon the spring and the compression of the spring, the

liquid from the formation rises up to where the trip valve is located, and stops there. To get the material from the formation area, the fluid from the formation area, by the water, gas, or whatever it may be, oil, up into the trip valve and through the trip valve into the drill pipe which is to entrap a sample, is accomplished by dropping an iron rod through the empty drill pipe and striking this plunger on top. The rod is dropped from the surface. This rod is known in the trade as a go-devil, and it consists of a rod about 30 inches long; and it weighs 6 to 8 pounds. The rod strikes the trip valve with great force by reason of its dropping several thousand feet. When the rod hits this plunger it knocks this plunger past this retaining portion which I pointed out. Those balls drop into the recess that is in that plunger, and that releases the friction hold on the trip valve, and the spring underneath the trip valve lifts it off of the seat, allowing the fluid to pass through and on into the drill pipe. It is done this way. The trip valve remains open until the device is withdrawn from the well, and it has to be set by hand before it will close again. It has a retaining dog above it here which [fol. 229] pops out and holds it so it won't go down again unless it is pressed in so it can be pushed down.

The Court: That means bringing it to the surface in order to set it again?

A. To close that trip valve again, yes.

The Court: It remains open until it is brought to the surface?

A. Yes.

There is no other means of closing the trip valve once it is opened. There is no other means of opening the trip valve so as to admit the fluid up into the drill pipe other than by dropping this iron bar called a go-devil. It has to be hit from above. When the trip valve is opened the fluid comes up from the formation, past the main valve, which is open by reason of the weight of the pipe compressing that spring and keeping that valve open, and then it passes up through the opened trip valve, and on into the drill pipe. The length of time that the device is left in the well, with both the trip valve and main valve open, depends largely on the amount of blow from the drill pipe, and by the blow I mean that the fluid entering the bottom of the drill pipe, which contains air, exhausts

the air there at the top of the drill pipe, causing a blow, which can be noticed very definitely if a wet cloth is laid over the top of the pipe; it will cause the clothe to bulge up and possibly wave as it lifts up.

Q. Now, Mr. O'Neill, is it possible to make a test of the formation area for the purpose of determining whether or not there is gas or oil there by a direct flow through these two open valves up to the mouth of the well?

A. You mean with the packer set?

[fol. 230] Q. With the packer set on the seat.

A. Yes. Wells do at times flow straight through.

Q. So that you make a test by direct flow up and over the top of the drill pipe at the surface?

A. Yes. When that is done you usually have some control on top of the drill pipe, so that the fluid can be turned into a tank or sump hole or something, but it flows straight on through. If there is sufficient pressure in the formation being tested to lift the fluid that far it will bring it right on through.

If there is not sufficient pressure from the formation to force the oil up through the entire drill pipe to the surface, a sample is entrapped by raising up on the drill pipe and releasing the compressive strain on this main valve spring. This main valve has been kept open up to this time by the weight of the drill pipe and also the force of the spring. As soon as sufficient weight has been lifted off of this spring to permit the spring to actuate, the spring closes the valve. The drill pipe is picked up very slowly, but the valve closes with considerable snap. The reason why the valve closes with a snap is the action of this spring. It closes with enough of a snap that it frequently may be felt at the surface on the pipe in the way of a vibration. Even though the pipe is being picked up very slowly, the valve closes rapidly, and that is the action of the main spring. When the drill pipe is raised at the surface, relieving the pressure upon this spring which is holding the valve open, the valve then closes by reason of the spring forcing the valve closed, if the pressure of the pipe is removed. The closing of the valve traps the sample in the drill pipe; by simply pulling the device out of the well, bring the sample to the surface. In the operation of the tester, neither the trip valve nor the

main valve are opened or closed by a rotary movement of the drill pipe. The main valve opens by lowering the drill pipe into the "rat-hole" with the device attached and compressing this spring and causing this mandrel to move through here and the valve to come off the seat there to allow the fluid to pass through the valve. The valve is closed when it is here. The valve seat is screwed into this. So that when the drill pipe is set down on it, it compresses the spring and lifts this valve off the seat, and the fluid passes through those holes and through the mandrel and on up to this trip valve. This is as far as it can go until the trip valve is opened by dropping a weight and striking this plunger.

I have never operated or used any one of the various Halliburton devices or the Simmons device. I have seen models of them. I have looked over models of them, but I have never had anything to do with the full workable size devices. I have seen, however, complete models, containing all of the various elements, valves and other adjuncts. I have seen drawings of the Simmons device, also drawings of the stop cock and gear device and the "J" slot device. I am referring to models and drawings that have been produced here and in the Texas case. I have also seen the specifications and the drawings and all of the disclosures in relation to them. The original Simmons device does not have a valve or equivalent of a valve for performing the same functions as a trip valve. The stop cock and gear device put out by Mr. Halliburton or his company does not have a valve similar to the trip valve or its equivalent, or perform any of the same functions as the trip valve in the Johnston device. That is also true [fol. 232] of the "J" slot device. The reason the trip valve was placed in the Johnston device, and the purpose it serves and the conditions it meets, is, as I said a moment ago, the trip valve remains closed until it is opened by dropping a rod from the surface, regardless of what obstruction may be encountered by the pipe or packer going into the hole. Up to the time the trip valve is opened by the dropping of the go-devil and its contact with the trip valve, no portion of the fluid from the formation area can get up into the drill pipe. The trip valve is a seal blocking out any fluid inside from passing on into the drill pipe until such time as that valve is opened. The main valve may open accidentally going into the well, from obstructions

or from running it in a little too fast or the mud being a little too heavy, which would cause the resistance of the packer passing down to be sufficient so that the weight of the pipe down on that would compress that spring.

Mr. Morgan: If your Honor pleases, we have brought into court a model of an oil well and a full-sized Johnston device, which we think will greatly facilitate matters in the giving of testimony and in the explaining of the functions of the device. With your Honor's permission, I will ask Mr. O'Neill to step down to the oil well model which is here shown.

Q. Mr. O'Neill, directing your attention to this glass model set upon a wooden and metallic base, I will ask you to state what that is.

A. That is a model constructed to represent an oil well. Here we have a metal container which would represent the reservoir in the ground. In that we have water with [fol. 233] anilin dye, colored red, to represent the fluid contained in the earth, in the reservoir.

Q. That fluid may be either water, gas or oil?

A. Yes. Then inside of this tube here we show a smaller tube containing that red fluid. That tube is supposed to represent the reduced bore of the hole we referred to as a "rat-hole." Above that we have this metal tapered shoulder, which represents the shoulder in the well. Above that we have the full-sized glass tube which represents the full bore of the well, the portion of the well that is made with the full-sized bit. In this we have a mineral oil, something that would represent the drilling fluid.

Q. That is the rotary mud?

A. That would be the rotary mud in the case of a well; yes.

Q. What does the glass casing there represent?

A. This would represent the walls of the well. We understand, of course, that the walls of the well would never be as smooth as this glass but it was made of glass so we might see through it and see the model go into that fluid.

Q. The glass represents the earth wall?

A. The earth wall of the well.

Q. And not the casing which is later put in when the well is put upon production?

A. That is right.

Q. Will you point out to the court where the packer is seated when the test is being made?

A. The packer is seated upon this shoulder. This model only shows the use of a shoulder packer or tapered "rat-hole" packer. Other types of packers would pack off [fol. 234] against the side walls but this one is constructed to demonstrate a tapered packer. That seat is made of metal because we were afraid that glass might break.

Q. Have we a device which is of a size sufficient to make a test in that particular model of the well?

A. Yes, sir.

My attention is now called to a Johnston device lying on the floor, which has been broken up into its component parts. I will start at the lower end of the device, explaining each feature. This piece of pipe with the slots or perforations in it, and welded together at the bottom, is known as the anchor. That screws into the bottom of the packer. It is sometimes spoken of as a perforated nipple. The primary function of this perforated nipple is to prevent large particles entering the tool that might plug up some of the reduced passages through the tool. The fluid enters through that. That, primarily, though, is to screen particles from the fluid which enters. The fluid enters through these perforations. After entering the perforations, the fluid passes through the packer and comes on up through the mandrel and tube and the equalizing valve, on up to the main valve, which would be open when the packer is seated, with the weight set upon it, and then through the main valve it comes on up to the trip valve.

The type of packer which is here before me, and which I have been referring to, is a "rat-hole" packer or conical packer or tapered packer. It is intended to seat into the entrance to the "rat-hole" and to seal off the fluid above from the formation below.

The member which is next above the packer is a member that screws into the top of the packer. It forms a bottom portion of the equalizing valve. The equalizing valve has [fol. 235] the function of, after the test is completed and before the packer is lifted off of that metal seat, letting the fluid, which is resting above the packer here, and which in a deep well might have a very high hydrostatic head on it—for instance, if this packer was set at 6,000 feet, the hydrostatic head down on top of this packer would be approximately 3,000 pounds to the square inch. As we take fluid up from under the packer out of the "rat-hole" and

bring it through, the pressure below the packer might be reduced, depending upon how much pressure there was in the formation we were testing. In that case I have reduced the pressure below. I have the constant hydrostatic head above, extending all the way to the surface between the walls of the well and the tool and drill pipe. And, as the pressure below is reduced, that would cause the packer to seat more firmly down into the top of the "rat-hole", just as though I had a cork in a bottle and I exhausted the air from the bottle to a certain extent. Then the cork would seat tighter. When we are through the test and we want to pull that packer off of the seat, that additional difference in pressure, caused by removing fluid from beneath the packer while the column on top of the packer remains constant, makes it necessary to put a great deal more strain of a pull on the drill pipe. That we found became dangerous, with the possibility of pulling the drill pipe in two. So this valve, constructed to relieve that pressure, has a mandrel with holes in here. It has a packing gland here. The packing goes in here. The packing has no relation to the packer we have heretofore been describing. It is like this. It packs off between the mandrel and the walls of the tool, to prevent leakage. It is packed in there and screwed [fol. 236] down with this nut. This goes in the bottom here as the bottom member. As the pipe is picked up, or while the packer is seated on the seat, this is down and the holes that we saw in the mandrel are below the packing. When the pipe is picked up, those holes are pulled up to where they match the holes through this hollow nut, so that the fluid on top of the packer may pass through these holes and down through this equalizing valve, through the packer and out through the perforations and into the "rat-hole" below the packer.

(The witness, in answer to questions by the Court, stated:)

These holes here—when the packer is seated the pressure is down. The packing gland sets in here. I describe it as an equalizer, to equalize the pressure above the packer with that below it. The fluid above is immediately in contact with the outside of this member here, the drilling fluid that is setting above the packer. For instance, here would be the walls of the well, and here is the tool. That whole space is filled with drilling fluid resting on here.

The problem is to allow some of the fluid immediately in contact with this member to get down into the place from which the sample has been withdrawn, without mixing with the sample. That is done in the following manner: When we are ready to let that fluid down we just raise up on the drill pipe, hoist it on up, and this mandrel slides. We only hoist it up far enough for this to open. The drill pipe is not detached from the packing. The mandrel slides inside of it this way so that when I pick up all that moves is this mandrel. When the drill pipe is lifted up the holes in the mandrel are pulled through a packing gland here and above [fol. 237] the packing, and then those holes are opposite the holes that are in here. These holes go all the way through. The fluid goes through these holes on the inside of this pipe. These holes do not enter into the place where the sample is contained. The sample is trapped above the valve, it having already gone up above the valve. It is clear out of the way. Then the fluid passes through here and through the inside of this, down and out through the perforations and into the "rat-hole," giving about the same pressure below the packer as that above it.

(The witness, in answer to further questions by Mr. Morgan, stated:)

That will enable the packer to be lifted from the "rat-hole" more readily; it makes it much easier to lift from the "rat-hole". Otherwise it might stick. It might entail a sufficient pull upon the drill pipe to damage the equipment and possibly to pull the drill pipe in two or to disrupt some of the equipment.

The next member is what we call the head of the equalizing valve. It screws onto the mandrel of the equalizing valve. That is the mandrel. And it serves two purposes. One is that it has threads here to which the main valve is attached, and it has a sufficient recess in here to allow the main valve to come down and open into that recess.

The next member we come to is the circulating valve. In wells where we are drilling the fluid is circulated down inside of the drill pipe and up the outside and around to a ditch constructed for the purpose of carrying that fluid back to a tank, where the pumps pick it up and pump it back into the drill pipe and down the well. It just continues that circulation. That fluid brings the sand and bits of shale, cuttings and things of the kind, to the

surface and deposits them in this ditch and tank; and the fluid, having dropped its load of cuttings, is picked up by the pumps and pumped back down through the drill pipe and up between the drill pipe and the walls of the well and back into the ditch again. This valve, known as the circulating valve, is used only in an emergency. When a packer is set on the seat and becomes very tight, so that we have grave difficulty in loosening it, we may pump fluid down through this tool and out through this valve; which is a back-pressure valve or check valve. The main valve has a hole through it, and the seat of the circulating valve is attached to the bottom of the main valve. The opening is closed by a ball here held in place by a spring encased in what is called in the oil fields a cage. This valve will permit fluid to pass through it from the inside of the drill pipe to the outside, but not from the outside to the inside.

Q. What is the purpose, or what is the emergency which calls upon the operator to use that particular circulating valve, and will you explain how it is done?

A. When, as I said a moment ago, a packer becomes tight, fluid may be pumped down through it and pressure built up with the pump beneath the packer, or it may be turned loose through these holes in the equalizing valve, and any debris that has settled upon the packer washed out that way. That is one of the uses. Another use is that sometimes in testing a well which has a very high pressure in the sand being tested, and the packing is lifted off of the seat and the tool started out of the hole, perhaps there have been four or five stands of drill pipe unscrewed and set back into the derrick, and the well decides it is going [fol. 239] to flow. In other words, the gas pressure in the sand has bubbled up into the mud and whipped the mud until the mud is much lighter than it originally was and the pressure in the sand thereby overcomes the hydrostatic head against the sand, and the well starts to flow. Unless some method of controlling that flow is had the well will go what we term in the oil fields wild; it will blow out.

It is difficult to say definitely what would happen if the well was allowed to blow out, but it might completely ruin the well. It might completely cut the derrick down, by virtue of the debris blown from the hole. In any case, it would be extremely undesirable and probably expensive. To overcome the possibility of blow-outs, this valve, the

circulating valve, makes it possible to pump fresh mud right through the drill pipe without going back to bottom to seat the packer or to open any valve, just to hook the pump onto the top of the drill pipe and circulate through it at any place in the well that trouble arises. In other words, to pump in enough drilling fluid or mud to overcome the pressure of the blow-out. Mud is pumped in that is not whipped up by gas, clean, fresh mud, and when that mud is pumped through into the well it makes a much heavier ground against the sand than the ground that was there thoroughly gas-cut and whipped up. In order to restore circulation and prevent the blowing out of a well, it is not necessary to return the packer to its seat. It may be pumped through at any point, just hook the pump onto the top of the drill pipe, which is normally done by seating on top of the drill pipe what is known as a Kelly. That is a square member which is used for rotating the drill pipe. It has the hose from the pump hooked into [fol. 240] the top of it, and they set the Kelly on and screw it up and start the pump, and they pump right on through the drill pipe without going back to bottom or without going back to set the packer again. It is difficult to say what would happen if one had to wait until he had gone back and reset the packer before he could restore the circulation and prevent the blowout. If the flowout starts there is frequently not time to run the drill pipe back to bottom and seat the packer in order to prevent the blowout. When that has to be done the pipe frequently has to be run in with the well blowing right up through the rotary table where the men are working. If the blowout is of sufficient force it would be impossible for men to work there.

If the device of the Simmons patent has been seated on a shoulder, opened, completed a test and closed, and it is three or four hundred feet from bottom on its way out of the hole, it would have to be run back to bottom and set on the shoulder or set tight enough so that the lower member might be held stationary while the upper member would turn on it, in order to align the holes through the two valve sections, in order to let the fluid be pumped through, so it would be necessary to run that device back to bottom and set it in order to pump through it. That is because the Simmons device is opened by the relative movement of one of the valve members on the other. If the top member is to be turned, in case the member that is hooked

to the drill pipe would have to be turned, the lower member would have to be held stationary. If the lower member turned with the top member there would be no relative movement to align the parts, and the valve would not open.

[fol. 241] Q. If the blow-out occurred while the device was from three to four hundred feet above the "rat-hole", how long would it take before the Simmons device could be lowered again to the point where the packer would be seated firmly enough to enable you to rotate the pipe and to rotate the valve, and thus open the valve, so as to enable you to restore circulation?

A. That would be very difficult to answer. It would depend entirely on the strength of the blow-out. The average time required for running a stand of drill pipe would be approximately three minutes. Three or four stands of drill pipe run under good conditions would take at least ten or twelve minutes to get them down, to get the packer set and open the valve. Under the best of conditions, I would feel that I would be fair in saying fifteen minutes, and under conditions of a blow-out it might be any amount of time.

Q. And might it be entirely too long a period of time to enable you to prevent the blow-out from ruining the well?

A. It might well be.

The Simmons device has no value for the purpose of restoring circulation under the circumstances I have just enumerated. The Simmons device has no equalizing valve such as I have described to enable one to more readily pull the packer off the seat without destroying the device. By the Simmons device, I mean the original device, Plaintiffs' Exhibit No. 9. The stop cock and gear device of the Halliburton Company has no circulating valve or any means of restoring circulation other than by doing what I said was necessary to be done in relation to the original Simmons device. The stop-cock and gear device has no equal- [fol. 242] izing valve. Before putting the device together, I would like to show the main valve, which is attached to the circulating valve. One more remark on the circulating valve. I said that the circulating valve opens downward, which would permit fluid to pass from the inside of the drill pipe out, but not from the outside of the drill pipe in. That needs explanation, because anyone would think that a sample entrapped in the drill pipe would fall

out; but whatever the fluid that we take into the drill pipe it is normally lighter than the drilling fluid which we have outside of it, and even though the drill pipe filled up full with fluid from the "rat-hole", the column of fluid inside would be lighter than the fluid outside. Consequently this differential pressure from the hydrostatic head of the fluid would hold this ball against the seat and prevent the fluid leaking out, and it is made that way so it will prevent the drilling fluid leaking in. As we pull out of the well we would expect the fluid to drop in the well as this string of pipe is pulled from it. That is overcome by constantly pumping fluid into the well between the string of tools and the walls of the hole and keeping the hole full to the surface at all times when the tool is being removed from the hole. That gives you high hydrostatic pressure in a position to hold the ball against its seat, and that is furthermore considered a safe method in drilling wells whenever removing any type of tool from the well, to keep the well full of fluid.

Referring now to the third Halliburton device, known as the "J" slot device, this device has a means whereby circulation can be obtained in much the same manner, if not in the same manner entirely, as the Johnston device. The "J" slot device has back pressure valves which may [fol. 243] be pumped through, as this device may be pumped through. The "J" slot back pressure valves also trap the sample in the drill pipe. And I might say, with reference to pumping through these devices, that both of them, the "J" slot device and this device, when the drilling fluid is pumped through the drill pipe, the sample entrapped is pumped out through that valve into the drilling fluid in the well, destroying it for its useful purpose. The Johnston device has had the circulating valve, which I have described, as a part of its assembly before the Halliburton Company brought out the "J" slot device. The Johnston device has employed the circulating valve ever since I have been acquainted with the device.

The next member which I wish to explain is known as the main valve section. We have here the mandrel, which has a hole through it, and it goes through here. This is a packing ring. None of the valves of the Johnston device that I have mentioned so far open or close by a rotating movement of the valve or of the drill pipe. The packing goes in on that junk ring. This packing gland screws

in here and comes in deep enough so that this valve seat may screw in behind it; so the valve seat would screw right in on top of this packing gland. Then the valve, the main valve, screws into this mandrel. When that is pushed down off of this seat the main valve is opened, and the fluid passes here through those holes and on into the interior of this mandrel and up. This spring which controls this main valve is placed in there. This member, the head of the tool, the valve section, screws onto that mandrel here. Now, this thread screws into the top of the equalizing valve, and the action is, when the packer is seated and the weight of the drill pipe let down, this mandrel moves [fol. 244] like that, and this spring is compressed between this shoulder and this one, and this is what we call a tension nut, and it can be used to take up any amount of tension on this spring. Tension on that spring is offered normally according to the depth of the well. If that spring were compressed so far by the tension nut that these spaces were closed up completely then there would be no travel for the mandrel, so that the valve could come off of the seat, but the tension is not taken up that far. It is adjusted according to depth. When the packer is seated and the drill pipe weight let down, then this member goes down, this mandrel moves through here, compressing this spring, and this portion here moves down into this box at the top of the equalizing valve. That permits the fluid which has entered the perforated anchor at the "rat-hole" and passed through the packer and through the equalizing valve to enter this valve called the main valve and pass on up to this valve called the trip valve. The fluid can't go past the trip valve until the trip valve is opened. The impelling force or action that causes that spring to open the valve is the weight of the drill pipe let down upon it, with the packer seated, so that the portion that is screwed onto here can't go any further down. Then the weight of the drill pipe presses that spring and pushes that valve off the seat. The valve does not open, nor does the spring compress by any rotating of the drill pipe or of the valve. There is no rotating process involved in it at all. When the spring forces that valve open, the fluid comes up, passing through the member which we have here and up to where it is checked or stopped by the trip valve. When the test has been completed and it is wished to close the main valve of the Johnston device, [fol. 245] this closing is accomplished by lifting up on the

drill pipe and relieving a certain amount of compressive strain on that spring. The drill pipe is hoisted very slowly. And when sufficient weight has been removed from that spring, the spring actuates that valve and snaps it shut with a great deal more speed than the drill pipe is moving. I explain that this way: When the main valve shuts, frequently you can feel the vibration on the drill pipe at the surface, and the only explanation I have for it is that when you pick up a string of drill pipe there is some stretch in the pipe. For instance, with a string of pipe set at 5,000 feet, with the weight down on the packer, if you put a chalk mark on the drill pipe at the rotary table and pick up, that chalk mark would travel probably 15 inches or such a matter as that before the bottom of the pipe ever picked up. So there is a stretch in there. And when the weight on top of that string has been relieved sufficiently there is a considerable stretch in the pipe and the spring then actuates, and I believe it takes up a portion of that stretch. I can't explain it otherwise and I have thought about it a great deal. But, nevertheless, it happens. It might be due to some inertia in the metal of the spring. That is something, however, that I wouldn't feel qualified to discuss. Myself and others have experienced that snap which comes after the pipe is lifted very slowly and slightly, and I don't believe that the slow hoisting of that drill stem would pull the mandrel through against that valve with enough impact to cause any such violent snap. In closing the main valve there is no rotation of the drill pipe or of the valve involved. The valve is closed simply by the lifting of the drill pipe slightly and slowly, as I have stated, [fol. 246] and by reason of the action of the spring. In going into the hole, if we hit a tight place, the same thing will happen. If the packer runs into a tight spot and the weight of the drill pipe comes down on it, that spring will be compressed and the valve opened. But, if the packer succeeds in going on through the tight spot, so it doesn't have to be picked up, as soon as it gets through the spring snaps it shut again.

I will now explain the trip valve, its uses and purposes. This is the encasing member. It screws into the top of the tube of the main valve section. In here we have a seat which this ball sets down on, and that affects the seal when it is properly seated down on that ground seat. We have here a plunger with a recess in it. These retaining

balls are calked in so that the hole extends through and the edge of the ball will extend through the inside. When this is pushed through that large part hits the balls and pushes them out and this sleeve drops down on them, catches them in that position and holds them against a large part of this plunger with a friction hold. That then is put in here and screwed down. That retaining sleeve caught on top of the retaining balls carries the whole member down, compressing the spring as it is screwed down into the inside of this member, so that the ball comes to rest on a seat which is located down inside of here. That affects the seal. That valve is the entrance valve for the tool. Everything else is open in the string of tools and they are ready for the fluid to start from the "rat-hole" up into the drill pipe. And an iron rod is dropped in. It hits on the top of this plunger. It pushes the large part of that plunger past the retaining balls and the balls drop into the recess which I showed you in the plunger. That relieves the friction hold and the fluid pressure and spring together will lift that valve off of its seat and the valve is open. That allows the fluid to come on into the drill pipe. Up to the time that the trip valve is opened no fluid is allowed to come into the sample chamber or into the drill pipe which is the sample chamber. The fluid has been permitted to come to this seat in the trip valve, where this ball rests against the seat, and it stops there. It is held up by the trip valve and it is not permitted to pass until the trip valve has been opened. Up to that time the drilling fluid has been allowed to come up into the device through the valves that I have mentioned, through the main valve up to the trip valve but no further. No sample has been taken until the trip valve is opened. When the trip valve is opened, sampling commences. There might be a little bit of fluid between that main valve and that valve trapped. It would be some eight or ten feet of fluid, whatever it was, between the packer and the trip valve. Between the main valve and the trip valve—

The Court: Let the witness state what the necessity of the trip valve is.

A. We go into the well with the tools assembled. If the fluid is very heavy, if the driller runs the tool a little too fast or the hole has tight spots in it, which they frequently have, the packer would offer so much resistance to going

down through the fluid that the weight down upon it would open this main valve. If I didn't have this trip valve, the fluid would go right on into my drill pipe because my drill pipe is being run empty or partially empty. I mean the rotary mud, and not the fluid in the formation. The drilling fluid. We haven't reached the seat for the packer yet. [fol. 248] So that there would be fluid in the drill pipe when the packer reached the seat of the "rat-hole" and there would be no way of determining how much fluid there was or just exactly where it came from. With the trip valve in there the tool can hit a tight place in the well and push through and open the main valve and the main valve will close again just as soon as the tool goes through. But that doesn't affect the test, because the fluid is held out of the sample chamber by the trip valve. In lowering the device into a well, say a deep hole of five or six thousand feet, there may be obstructions on the road down which would cause the packer to be obstructed temporarily and the weight of the pipe above it might open the main valve and permit drilling fluid from above the "rat-hole" to enter into the device; it would permit drilling fluid to enter right into the drill pipe. If the main valve is open, the fluid would enter under those circumstances into the device; but with the trip valve closed the fluid could not come up any further than the trip valve. The purpose of the trip valve is to prevent an unknown amount of fluid to come in because at times operators want to run some fluid in the pipe and they are afraid maybe they will collapse their pipe, and in that case we put the tool on and, if they want to run a thousand feet of fluid, we put on a thousand feet of pipe, fill that up with fluid and then put the trip valve in on top of the fluid and we know how many feet of fluid is in there.

I don't know that I have made it clear, but these "rat-hole" packers normally have a diameter within an inch of the inside diameter of the walls of the well. And that means that, if there is very much deviation in the hole, tight spots may be found frequently.

[fol. 249] The other function of the trip valve is, if we run a string of drill pipe on this tool, and the operator doesn't know it but he has, just the same, a leak in his drill pipe, then the drilling fluid that is in the well will leak in on top of the trip valve. With only the main valve there and no trip valve I might not know that. I might come out of the well and think, "Well, I have made a test." But with the

trip valve there I do know it because the iron rod that is dropped in to open the trip valve has the speed of it so reduced by any fluid on top of this member here that it doesn't hit this plunger with sufficient impact to open it. The result is I come out of the well with the tool and I find say a hundred or two hundred feet of fluid in my drill pipe and I break the tool down and find my trip valve is still closed. Now, if that trip valve has been opened, it has to be brought out to the surface to be closed. So I know it has not been opened and I know that that fluid didn't come through the trip valve. So it must have leaked in through the drill pipe above the valve. Then we hunt for the leak in the drill pipe, remove that, put in another piece of pipe and go back and make our test. If we didn't have this trip valve and there was a leak in the drill pipe above it, we would only know whether or not we had made a test of the formation area in cases where we got a definite fluid sample of water or oil or lots of gas. If we tested a formation which was negative, that is to say, which did not produce either oil or gas or water, and there was a leak in the pipe and we had no trip valve to enable us to determine whether or not there was a leak in the pipe, we would not be able to say that we had made a test. I would be in serious doubt [fol. 250] as to whether or not I had made a test. It would be uncertain. It would be a matter of doubt and would be undesirable. With this trip valve, if there is a leak, the mud fluid going into the drill pipe from outside the drill pipe in the well would come down to the trip valve and form a mass of fluid there through which this iron pipe which is dropped would not penetrate with sufficient force to open the trip valve. If the device is brought out with mud or fluid above the trip valve which was not open, you would know positively that no test had been made and that the fluid in there was due to a leakage and was not fluid coming from the formation, and I would be able to tell the well owner that no test had been made. I have had just such experience.

The valve which lies below the main spring, which we have been calling the main valve, does not alone operate so as to enable the fluid to enter the drill pipe which is the sample chamber. That valve only permits the fluid to come to the trip valve. Your trip valve is the valve that is the entrance valve to the sample chamber. The main valve is the valve that traps the sample in the chamber after it has

been admitted by the trip valve. The trip valve member screws into the top of the main valve section. There is a collar which goes on top of the trip valve, into which the drill pipe is screwed, so that the entire device may be lowered into the well. The trip valve is opened by dropping an iron or metal bar from the top of the well. The trip valve may be down four or five thousand feet or more. In order to demonstrate how this trip valve is opened by the go-devil, I would like to have it borne in mind that this trip valve has only been set by hand. In running the trip valve [fol. 251] in a well it is set up with a wrench and it takes a great deal more of a blow or an impact to open it in that case than it would in this case. But by tapping this plunger I can trip that valve, which is like it is tripped when we are ready for the sample to pass through into the sample chamber. If it were screwed up as it is in actual operation, it would require a much greater blow than it does in its present condition. The blow which I have just given the trip valve has opened it, and when it comes open this member slides out of this retaining sleeve and this spring member, which we call a dog, jumps out so it can't be closed. The fluid comes through this member and out through these holes. I mean the holes that are shown in the top of the trip valve plunger. I have removed the trip valve, and explain that the dog, in case one has to circulate through the tool, prevents the trip valve closing under pump pressure, so that it will remain open once it is opened. In other words, on withdrawing the device from the well, the trip valve cannot be closed. It closes manually. The thing that holds the sample up in the drill pipe is the closing of the main valve which I showed you. That traps the sample. The balls had a friction hold on the enlarged member there, and when I hit this plunger I knocked the enlarged portion of the plunger past the balls so that the balls dropped into the recess in the plunger. The marks may be seen on the end of the plunger where the balls slid along as the plunger was knocked past. After the balls are knocked into the recess, the valve opens. The friction is relieved and this member rises and the balls are up in this sleeve. Then the fluid coming through the seat there enters here, comes through holes there and enters here, and out through the holes in the top of the plunger and on into the drill pipe sample chamber. There is no way of closing that trip valve after it has once been opened and while it is in the well.

Neither the Simmons device nor the Halliburton stop cock and gear device, nor the Halliburton "J" slot device has any trip valve or its equivalent.

In operating one of those devices, should there be a leakage through the drill pipe above the device, there would be no way of determining whether or not the fluid found in the sample chamber came from the formation area, or whether it came in from a leak in the drill pipe, in operating those devices, except in the event that the fluid found in the drill pipe was definitely indicative itself. If it were salt water, oil or lots of gas, you would know that you had taken some fluid from the formation. However, you wouldn't know but what some fluid, if there were mud in there, had leaked in. If you were testing a formation which would ultimately turn out to be a formation where there was no gas, no water and no oil, in other words, where under a proper test the result would be negative, and you were using the Simmons device or the stop cock and gear device or the Halliburton "J" slot device, and a leak should develop in the drill pipe somewhere up and down the well above the device, you would not be able to determine whether or not you had made a test. In the use of the Johnston device you would be able to tell whether or not you had made a test. You would know that nothing had leaked in if you found that trip valve open because, if the fluid had leaked in on top of it, the blow would [fol. 253] not open the trip valve. If the trip valve is not open and there is fluid above it, I know there is a leak. It has happened once or twice in our work that the trip valve was seated a little too tight possibly; and it has happened also that subs, as we call them, in the string of drill pipe, which are so constructed that they have one sized thread on the bottom and another size on top in order to hook tools to different kinds of drill pipe, may have a shoulder inside and the go-devil would strike that and its force would be expended and it would drop down on the trip valve and not open it. But in that case you don't have any fluid above it. If we find the trip valve is closed and fluid above it, we know we have a leak. That is the only method I know of whereby a leak may be determined; I mean with accuracy. That general method would be the only way that I know of to determine a small leak in a drill pipe. The use of a brittle disk in there might

determine it. A brittle disk in place of the trip valve would not be as consistent in its operation. To explain that statement, I will state it is merely a disk set into a joint of pipe which will prevent the passage of fluid through, and of such a nature that a rod or an object dropped from the surface through the empty drill pipe will strike the disk and break it and allow the passage of the fluid there. It is not as consistent because with a brittle disk or a frangible disk the amount of pressure that is below the disk would vary in almost every well. Sometimes the fluid would be up against it with so much pressure that perhaps the blow would not break it. The same disk, with less pressure supporting it, would break readily. Again, if the disk is [fol. 254] too weak, the fluid pressure itself might break it. It is not as consistent in its operation as a trip valve. A brittle disk, I would say, if it operates, it should give you about the same information that the trip valve gives. Not to my knowledge have any of the Halliburton devices or the Simmons device anything in the nature of a brittle disk or any sort of a valve which operates as a brittle disk or as trip valve would operate. I have seen the models that have been introduced here. None of these models show a trip valve or the use of a brittle disk or anything of that nature.

Q. Mr. O'Neill, I want to call your attention back again to this model. Have you got a Johnston device in model form which will fit into the model glass well here which we have?

A. Yes. That one.

Mr. Morgan: Will you gentlemen come forward and assist Mr. O'Neill.

Q. I want you to place that model of the device into this model well and I will ask you, Mr. O'Neill, as it is being done to explain the operation and the different functions.

A. May I say that these two joints here are put on to represents joints of drill pipe. They have been cut away and glass inserted in there purely for the purpose of being able to see through there. That drill pipe does not have any such insertions in it. Then we have below here the trip valve and the main valve and the equalizing valve and the packer and the anchor, the perforated anchor.

[fol. 255] Q. Will you insert that device, together with the two model forms of drill pipe, into the well?

A. Let me state further in here—

Q. Have you anything there which will artificially supply what you might find in the formation in the way of pressure?

A. In the oil sands or the reservoirs we find some pressure. It varies. It might be very high or might be very low. That is a force which causes the fluid coming out of the reservoir to enter the drill pipe. Naturally, there is no natural force in this tank. So we have supplied a small pump here with which we can put a little pressure on here to cause that fluid to rise.

Q. In other words, that takes the place of the natural pressure which you find ordinarily in formations about to be tested?

A. It would represent that natural pressure.

Q. And you have a pump here which forces air in to take the place of that natural pressure?

A. Yes. There is a gage on the back to show the pounds and then there is a valve which will permit the pressure being bled off and allow the fluid to drop back down into that reservoir chamber.

Q. Will you supply some pressure there, please, below the opening into the "rat-hole"? That is sufficient. Now, will you proceed to put the device in?

A. We bleed that down so as to get the fluid down below the shoulder there.

Q. Now the device is going into the well, is that correct?

A. That is right.

[fol. 256] Q. It is now down in the drilling fluid?

A. Yes. It is passing through what represents the drilling fluid.

Q. Just a moment. Will you stop right there? Suppose on going down the packer should encounter some obstruction in the well, what would be the effect upon the so-called main valve?

A. The packer encountering an obstruction here would be impeded in its progress and the weight of the pipe being let down on it would compress that spring there and cause that mandrel to move down and push the valve off the seat and allow the fluid to come in as far as the trip valve.

Q. Where is the trip valve now located?

A. It is right up in there.

Q. Then, if obstructions were encountered, the weight of the pipe pressing down upon the packer thus obstructed

might open the main valve so as to admit fluid as far up as the trip valve?

A. Yes. If that pipe were pressed on through that obstruction, however, this spring would snap the valve back together as the pipe was lowered on towards the seat.

Q. Could any of that fluid get any farther into the device than the trip valve under any circumstances?

A. Not unless the trip valve were leaking and it doesn't normally do that.

Q. All right. Now, please lower it. Now where is it coming to?

A. The anchor is passing through the seat into the "rat-hole".

[fol. 257] Q. That is the perforated nipple below the packer?

A. Yes. And the packer is coming down onto the seat. Now the packer is down upon the seat.

Q. Is it sometimes found difficult to secure a firm and complete seat which will seal off the fluid from above the packer from the formation below?

A. Yes.

Q. What, then, do you do?

A. Well, whenever that is put on the seat it is customary to set it down there and let the weight of the drill pipe down on it and then raise up some on the drill pipe and let it down again. That is what we call spudding a packer down on the seat. At this place here the packer might be considered a stopper and that "rat-hole" a container of which the walls were porous, for instance, a bottle that had porous walls. We set this on here and we have trapped the fluid down into that "rat-hole" and the weight put down upon it has to dispose of some of that fluid in order to make room for the packer to seat tightly to the formation. Furthermore, the walls of a well are usually lined with a film of rotary mud. That is the plastering action in the mud, which helps to support the walls. That seat would also be lined with that and the packer has to be worked down until it has gotten a firm seal against the formation because the soft mud under the side of the packer, with this weight of hydrostatic head upon it, would go out and cause the packer to leak as soon as the tool were opened.

[fol. 258] Q. How do you finally determine whether or not you have a firm seat so that there is a complete sealing off of the area below from the area above the packer?

A. We will take either a board or a piece of a carpenter's square and lay it across the top of the rotary table against the pipe and put a chalk mark on there, and then we will raise up on the pipe and let it down, and, if that chalk mark moves down, we put on another chalk mark and we raise it up and let it down again, and, if it moves down some more, we do it over again. And we work it that way until it doesn't go appreciably farther. It may not move more than that much each time after it is on the seat but we keep working it that way. Each time we let it down this spring compresses here and that mandrel moves down and opens the main valve, but the trip valve has not been disturbed.

Q. It has not been disturbed, so no fluid at any time under this spudding can go up into the sample chamber?

A. Correct.

Q. How do you know that there is not a leak down here at the packer so that fluid may leak down into the "rat-hole"?

A. We wouldn't know that until we opened up the tool completely. The trip valve is open. At that time the fluid stands to the surface around the drill pipe, and we look down through the rotary table between the walls of the hole right at the surface. You have a conductor string in there. We look down between that and the drill pipe and we watch that fluid, and when that tool is opened completely, if that fluid falls down and goes down the hole, we know the packer is not holding and the fluid is going down [fol. 259] past the packer and coming into the empty drill pipe, and that is not a test. That doesn't give you a chance to test the fluid in the "rat-hole." The purpose of that packer is to get that off from the "rat-hole."

Q. But the operation fully discloses that, so that you are not deceived by any fluid that you find there?

A. No. If that packer leaks, the fluid will drop and it drops rapidly.

Q. And you know immediately there is a leak?

A. Yes. When you are testing in formation that is quite porous a certain amount of the drilling fluid will seat in those upper formations. In that case this fluid will just lower very slowly, but when it leaks by a packer you have the fluid, with a high hydrostatic head, passing through a relatively small opening into a drill pipe that is empty. So it is under high pressure on one side, with a small opening, and a low pressure on the other side. And it passes quite

rapidly and will damage the seat in all probability as it goes through. So that it will drop faster if you leave it.

Q. Can you turn that pipe a little bit so that the openings that have been made in it will disclose to his Honor the fluid as it comes up through?

A. When he picked up then, the equalizing valve opened, and as he sets it down again it closes.

Q. Will the working of that equalizing valve be disclosed in the operation that we are about to have?

A. Yes. When we are through this test and ready to pick this up, if we will watch this when he picks up, the mandrel will come up like that, and if we will watch closely we can [fol. 260] see the fluid going along those holes and coming out down in here.

Q. That is right here (indicating)?

A. Yes.

Q. The operator here is supplying the weight and pressure which is ordinarily, in the active and field operations, supplied by the weight of the drill pipe? He is pressing down in place of that?

A. Yes.

Mr. L. S. Lyon: What are you pumping that pump for?

Mr. Morgan: To supply the pressure which would ordinarily come from the natural formation.

Mr. L. S. Lyon: I thought he did that before. What is he doing it for now?

Mr. Morgan: He releases it when he backs it off. If you will notice here, Mr. Lyon, he presses down—

Mr. L. S. Lyon: If he is going to keep on operating that at different times I think it ought to be in the record.

Mr. Morgan: All right. Let us show that the operator is supplying, by this particular pump, air, in order to create the pressure which would ordinarily be there in the operation of the well down in the formation.

A. This pipe has been pressed down, and you will notice that the main valve spring is compressed; it is in a collapsed position.

Mr. Morgan: Now, will you supply some pressure there, Mr. operator, please?

(Operator did so.)

[fol. 261] By Mr. Morgan:

Q. Now that hasn't been tightened very much?

Q. Now, the first fluid to come from the formation area will be what?

A. The little drilling fluid that is in the "rat-hole" will come up, and then the fluid from the formation will come into the "rat-hole" and it will come on up.

Q. All right. Now are you ready to make your test?

A. Yes. It is all set ready to open the valve.

Q. Now will you open the trip valve? You are now using an iron rod?

A. Yes. The fluid can be seen rising through this glass. There is your fluid coming on in there.

Q. That is the drilling fluid, the white fluid, and then comes your red or your formation fluid?

Mr. L. S. Lyon: What are we pumping this thing for now?

Mr. Morgan: To supply pressure. Now you can stop the pressure whenever you get far enough.

Q. Looking through the glass in the drill pipe, it shows red, does it not, which indicates—

A. Yes.

Q. —that the formation fluid has come up into the sample chamber or drill pipe?

A. All the way through this string of pipe. Now, when the go-devil is dropped it opens the trip valve and it passes through the trip valve and on into the drill pipe.

Q. The next procedure is to entrap your sample?

A. Yes.

[fol. 262] Q. Let us proceed to do that. Will you show the court how the springs open and how the equalizing valve operates when the pressure is lifted?

A. It is opening up there now.

Q. The packer is still seated?

A. The packer is still on the seat.

Q. Is the so-called main valve closed?

A. We just can't deal with the relative pressures here that we have in the well, and that pressure pump has been supplied just purely—

Q. Is the equalizing valve open?

A. No, the equalizing valve hasn't opened up yet. As he picks up you see that mandrel moves up.

Q. The main valve is closed?

A. Yes. The main valve closed when the spring opened. The fluid is coming down. This fluid is dropping here.

Q. You will notice the fluid outside the drill pipe is entering the pipe through there and passes down through those holes, and down, and up through these perforations here into the "rat-hole." Now, are you ready to withdraw your sample?

A. Yes; we are ready to withdraw the tool from the well.

Q. Now, stop for a minute right there. You are some distance above the place where the packer had been seated?

A. Yes.

[fol. 263] Q. Now, suppose a blow-out comes, how will you circulate so as to prevent that well from blowing out?

A. Well, just hitch the pumps on through the kelly, as we call it, and start the fluid pumping, and pump this fluid clean out of here, and pump this circulating valve ball off of the seat, and the fluid would go right on down, and some of it will come out here, and some go on and come out here.

Q. As you withdraw the device, together with the drill pipe, from the well you take each stand of drill pipe off as a separate and distinct operation, do you?

A. Yes.

Q. In other words, one stand of pipe is taken off and set back?

A. Yes, set back on the derrick.

Q. And the same with the next one, and so on?

A. Yes.

Q. It would be necessary for you to take back those different stands of pipe and put them on the pipe below, in order to make a seat, before you could circulate?

A. Oh; no, not with this device. We can circulate from any point in the well.

Q. Without any great loss of time?

A. Yes.

Q. Will you go ahead now and take it out? That is not the actual operation, because each stand is taken off as it comes up.

Mr. L. S. Lyon: That tool isn't taken apart?

Mr. Morgan: Oh, no. I mean the stands of drill pipe.

Mr. L. S. Lyon: There isn't any drill pipe on there.

[fol. 264] Mr. Morgan: Yes. This is drill pipe right here. This is intended to represent drill pipe.

Mr. L. S. Lyon: The part that the sample is in you don't take apart at the top of the well, do you?

Mr. Morgan: Mr. O'Neill will answer that.

A. Well, for instance, we are testing on a 5,000-foot hole, and we have a high pressure sand, and we get 3,000 feet of drill pipe full of oil. To get that 3,000 feet of drill pipe out of the hole it will be necessary to unscrew it in stands and set it back on the derrick, and then unscrew the next one and set it back, and so on. We take a sample every time we break a joint. Here is the go-devil. You can see it through there, sitting down on top of the trip valve, that rod.

Mr. L. S. Lyon: Is this the way you are supposed to take a sample, out of the pipe or the well?

By Mr. Morgan:

Q. Will you explain whether that is the method you use?

A. We break off the drill pipe until we get down to the tool. As we pull it out of the hole we set back a stand of drill pipe, and pull up another one and unscrew it and set it back, until we finally pull up to where the tool is. Then we just pull the tool up in the derrick and break off the circulating valve, and that permits the fluid to drain back through, to drain the sample out of the bottom of the tool.

Q. Each stand of drill pipe above the device is usually full of fluid, is it?

A. Not unless we get a full string. If the well flows to the surface you would have it full to the surface, but if [fol. 265] you just place it in there 200 feet you would only have 200 feet of fluid.

Q. In 200 feet of drill pipe?

A. In 200 feet of drill pipe and tool combined.

Q. Now, Mr. O'Neill, I believe you stated that you were familiar with the Halliburton device and the Simmons device from having seen models and drawings and specifications. Referring first to the Simmons device, does the Simmons device contain any valves which are opened or closed by a vertical pressure of the drill pipe?

The Court: Just hold that. Is it necessary for the witness to illustrate his answers now in the way we have been doing?

Mr. Morgan: I don't think so, your Honor.

The Court: You can take the witness stand now.

Mr. Morgan: I think he can go back to the witness chair.

By Mr. Morgan:

Q. One other thing. I notice above the packer here you have certain canvas wrapped with rope. What is the object of that?

A. Well, that is a theory of ours. We don't know whether it operates or not. But these ropes are cut so the canvas is loose when going in the well, and we think that if a very minute leak started where this packer is joining the seat, that the fluid passing out would suck that canvas into it and probably stop it. That is the theory we have in putting it on there.

Q. Now, you have here the complete device, shown on the floor?

A. Yes.

[fol. 266] Mr. Morgan: We offer in evidence this life-sized and complete device known as the Johnston device as Defendants' Exhibit No. D.

The Clerk: Defendants' Exhibit D.

Mr. Morgan: And we also offer the model of the well, and that will be Defendants' Exhibit E.

The Clerk: Defendants' Exhibit E.

Mr. Morgan: And we also offer in evidence the model that was used in operating in that well.

The Clerk: That is defendants' Exhibit F.

The Witness (continuing): The only valve in the Simmons device is opened by a rotary movement of the drill pipe which in turn causes the upper member of the valve to rotate upon the lower member. There are no spring valves used in connection with the Simmons device. It is not possible in the operation of the Simmons device to open the valve by the downward pressure or movement of the drill pipe. It is not possible to close the valve in the Simmons device by lifting the drill pipe or by the operation of any spring upon the valve. That is also true of the stop cock and gear device. In other words, there are no spring valves in the stop cock and gear device. The valve in the stop cock and gear device cannot be opened nor can it be closed by any vertical or upward movement of the drill

pipe. In the later Halliburton device, known as the "J" slot device, the valve is opened by a vertical movement, but the tool is unlatched by a rotating movement to be put in [fol. 267] a position where the vertical movement will open the valve. In other words, in the later Halliburton device the rotating movement does not, in and of itself alone, open the device. It simply unlatches the plug or pin and places it in a position where the vertical or downward movement of the drill pipe forces the valve open. To that extent it is similar to the Johnston device. The valve in the "J" slot tool contains springs. Up to the time that that particular device was placed upon the market, none of the Halliburton devices to my knowledge contained spring valves upon which there was exerted a vertical pressure to open them. I never saw one, anyway. None of the Halliburton devices, up to the time of the "J" slot device, to my knowledge contained any such feature. The Johnston devices have, ever since I have been acquainted with them, contained that particular feature. In the Simmons device the valve would be opened by rotary motion of the drill pipe. If the valve were set too tight to open conveniently and there were a leak in the drill pipe, the tool might be pulled finally from the hole, if the test was over, and the fluid found in the drill pipe believed to have come through the tool, while it may never have come through the tool; it may have leaked into the drill pipe above the tool, and the valve may never have been opened. With the stop cock and gear device, with that you would not be definite, where a small amount of fluid were recovered in a test, whether it had leaked into the tool through the drill pipe or whether the valve had been opened, unless the fluid itself were indicative of where it came from. If the fluid were oil or gas or water, you would expect that the valve had been opened [fol. 268] and that it came from the formation, but if it were mud, such as we get in a negative test, there would be no way of being sure whether the fluid leaked in or came through the valve.

The device which you now show me is a casing packer and is a device that is used on the bottom of the testing tool which I described this morning, in making a shut-off test in casing for the purpose of determining whether or not the cement which has been pumped down through the casing and upon around the outside between the casing and

the walls of the hole has effectively shut off the water which may be above that point in such a manner that the water will not have access to the oil zones below. Normally casing is not set or cemented in a well until something has been found that would appear to be of value. However, a casing is at times set where a hole is not standing up too well, and it is caving some. And in that case it is set to protect the walls of the hole, and where it is so set a shut-off test may be required. But when the casing is set because of some valuable product encountered in the formation and to protect that product, why here in California test is required to show that the water which would lay above that productive horizon has been excluded from it. In making such a test the casing is already in the well and has been cemented off, and when I say has been cemented off, that is the common way of doing it. There are times when you get a formation shut-off. It is done commonly when trouble is encountered in putting the casing into the hole. So that it is impractical, and at times almost impossible, to force the cement around the casing. That is an undesirable condition, but it happens. But the rule is at this time to cement off those things. The Johnston Company uses a packer like this.

Briefly explaining this packer, I will state that the perforated anchor screws into the bottom collar just as it does on that "rat-hole" packer. These slips, grooved metal articles, are designed so that when this has been lowered into the well to the point where it is desired to pack off, that the packer may be unlatched, allowing the mandrel to pass down through this sleeve, these springs holding a friction hold against the casing, holding this casing still while the mandrel is turned to unlatch it; and then they hold it still further while the mandrel passes down, and as it passes down the slips rise right up on that tapered member here which we call the bowl. In so doing that taper expands the slips out against the pipe, and as the weight is set down upon it these slips bite into the metal and take hold, so that more weight is let down and they press tighter. They are more or less wedge-shaped. Then as the weight is let down completely upon this member we have a packing element in here, composed of canvas and rubber molded rings, and the weight comes down upon this top member while this member is

held stationary by the slips, and through there there is a sliding sleeve, so that, as this comes down, it expands these rings against the casing and thereby effects the seal. This packer is designed to seat and expand, forming a seal upon the casing. In my opinion, it is not possible to use a packer in a shut-off test without setting it against the casing. I don't know of any way of setting a packer against the formation in order to establish a water shut-off test. [fol. 270] I don't know of any way it can be done, because, if it was set against the formation, the seal would take place below the bottom of the casing, and in that way the hydrostatic head of the drilling fluid in the well would have access to the point where the test is to be made. In casing tests sometimes we have a little oil sand or gas sand open, and that may be tested along with the shoe of the casing, but it is preferable on a casing test—and by that I mean a test of a water shut-off—to not have any production open below at the time, because it sometimes is confusing as to the effectiveness of the shut-off.

(The packer just identified by the witness was offered and received in evidence as Defendants' Exhibit G.)

The Court: For the benefit of all concerned I will say that I hope you appreciate that I am trying to follow this case as we go along, but I am not impressed with that trip valve element at all. I do not see where it cuts any figure in the case, because the end to be accomplished is to secure that material that comes into the "rat-hole" and bring it to the surface. It is true that the trip valve operates probably to insure against dilution of it or deterioration of it or mixing with some other element. At the same time, it doesn't strike me that that is a part of or related to the patent itself. That you might say, is somebody else's business, not contemplated in the patent, that is, to guard it against some of the many incidents and dangers that happen in this business, as in all other businesses. I may be entirely wrong about this. I feel, however, that I should [fol. 271] explain to you as we go along just how it is developing in my mind.

Mr. Morgan: Thank you, your Honor. We certainly appreciate the fact that your Honor does so, because that, to our mind, is a very important factor, and we certainly appreciate your Honor's frank statement.

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The Court: Well, you will have a very hard time to convince me that this trip valve amounts to a terrible lot so far as the patent itself is concerned. Now, mind you, according to my view now this patent is, as I expressed it a moment ago, devoted to the movement of this material that comes in from the stratum and affording an opportunity to examine it without the removal of the mud and the removal of the pipe. All right. Go on.

Mr. Morgan: Does your Honor feel that your Honor fully understands the function and nature and necessity for this trip valve?

The Court: Yes, I think I do. I think I understand that the purpose of the trip valve is to insure purity of the test, that is to say, the absence of any foreign matters that will prevent you from making and getting an accurate test of what you find in that "rat-hole". That is about right, isn't it?

The Witness: That is one of its purposes.

The Court: Isn't that its sole purpose?

The Witness: No. We consider the trip valve as the entrance valve.

The Court: Stop right there.

The Witness: To the sample chamber.

The Court: Suppose you didn't have that trip valve, and suppose that there were no leaks or anything in the pipe [fol. 272] that would bring some foreign substance in. Do you get me?

The Witness: Yes.

The Court: Would you have to do anything more than bring the whole matter to the surface? You would have the contents of the "rat-hole" there, wouldn't you?

The Witness: If there were no leaks in the pipe and no obstructions in the hole, in an ideal case, you would go right down and set the packer on the "rat-hole," compress the springs, and let the fluid in, and raise up, and the springs will close that main valve and trap the sample, yes, sir, that is correct.

By Mr. Morgan:

Q. Will you explain fully all of the different factors which that trip valve undertakes to correct, the different things that may enter into the obtaining of a test, which, by means of the trip valve, enables the test to be a successful one?

A. In the first place, we close the trip valve before we start in the hole, so there is a stoppage in the string of pipe that would prevent fluid going into the sample chamber.

The Court: From where?

A. If the main valve were opened by any obstructions, rough places in the hole, and that frequently happens going in. Without the trip valve, if the main valve should open, I would have taken fluid into the drill pipe, which would be merely drilling fluid, long before I reached the shoulder and set my packer. Any obstruction would cause the weight of the drill pipe to compress the spring and open the main valve, and without the trip valve I might have ever so much fluid in the drill pipe, and I would have no way of knowing [fol. 273] how much. With the trip valve in there the fluid can't go into the sample chamber, even though the main valve opens. When I strike an obstruction in the hole the main valve will open, and as quick as I have pushed the packer past that obstruction the spring will snap the main valve shut again. That does not affect it at all, because the trip valve is holding the sample chamber dry until such time as I drop the iron rod in and open it.

The Court: Your trip valve is above the sample chamber?

A. It is at the bottom of the sample chamber, but above the main valve.

The Court: If you didn't have any trip valve at the place where the trip valve would be, that would be the bottom of the sample chamber; is that right?

A. Yes, sir. If there was no trip valve the sample chamber would be open whenever I open my main valve.

In seating the packer it is necessary to give the packer considerable weight, so that the main valve opens every time I put the weight down on the packer. If the main valve opens that way and the packer doesn't make a perfect seal on its first contact with the seat, then the fluid which I am trying to pack off above, without the use of my trip valve the fluid would come past the packer into the drill pipe and on up, because it has a high hydrostatic head down on the packer, and the drill pipe is empty, and that fluid rushing past the seat would cut the seat in such a manner that one couldn't pack off. And it is a little difficult [fol. 274] to cult—we might have reason to believe—we wouldn't know—we might have a perfect seal the first time, but we wouldn't expect it, and we work that packer

down on the hole, on the seat, to get all the mud out from under the contact between the packer and the shoulder, and without the trip valve we couldn't do that. When we do work the packer down on the seat we allow the weight of the drill pipe to come down on the packer, and that opens the main valve, and when we raise up with it it closes the main valve. That is what we call spudding a packer. We spud those packers several times, in order to get them down on the seat, until they don't go down any further, and then when that is done our main valve has been opened several times and our trip valve has been closed. If it were run without the trip valve the pipe would have a lot of drilling fluid in it, and no one would know how much. But with the trip valve we would keep that out of our sample chamber until the packer is firmly seated. It would be possible that you could by some means close the main valve when you wanted to; to run your device into the hole down to the "rat-hole" seat with the main valve open all the way, without affecting the sample in the slightest. I could put something under that main valve to hold it open and, using my trip valve, go right on down and set the packer, and then in pushing the main valve open further why the object holding it open might be dropped out. I had one [fol. 275] test run in Ventura which showed the necessity for this trip valve in connection with a tester. I had one run in Ventura which was a test of a shut-off, and a representative of the Division of Oil and Gas was present to witness the test.

By the Court:

Q. Was it a water test?

A. Yes; a test of a shut-off required by the State. And, after the test was completed, we pulled out and found fluid in the pipe. The oil company operator didn't expect to find very much fluid on a dry shut-off test and it wasn't surprising when we found, as I recall it now, about 200 feet of mud in the drill pipe. And the representative of the Division of Oil and Gas said, "That seems to be a clean test. There is no water present. It is all right." And I asked if he wouldn't remain with me until I had dismantled the tool to 'let me see that it had all worked because we had an idea that the trip valve hadn't opened. The pipe usually jumps a little when it opens. So I dismantled the tool and showed him that the trip valve was still closed and that the fluid was

on top of the trip valve. That showed me that there was a leak in the drill pipe, which might never have been discovered but for that fact and the test might have been passed as it was and considered a test of that shut-off when, as a matter of fact, that shut-off had not been tested. And we then discovered a leak, removed it and went back in and made the test over. If the trip valve had not been in there, the test would have been misleading. It might have been very misleading.

[fol. 276] Cross-examination.

By Mr. L. S. Lyon:

The Witness: I appeared as a witness and testified for the defendants before Judge Randolph Bryant a year ago last June at Sherman, Texas, at the trial in the United States District Court there of the case of these plaintiffs against the Johnston Formation Testing Corporation and E. C. Johnston. In my testimony before that court I explained the operation of the Johnston tester, but I don't believe I explained it to the detail that I have here. I explained the device that I was familiar with, that I had been using in California. The device that I explained to the court in Texas is the same device that I explained here today.

Q. And that was the device that was involved in that case down there, that you explained to the court there, was it not?

A. The device used in California has the equalizing valve inserted into the string of tools that is not in the Texas string of tools,—that valve is not used in the Texas work.

Q. Otherwise, the device there is the same as the one you have described here?

A. The principle of it is the same.

Q. Well, it is exactly the same, isn't it?

A. I will have to say no again because we have remade the tools that Mr. Johnston brought into this country, and we have changed the lengths of various parts and strengths and materials so it is not the same device; but the same principle is involved in the operation of it.

[fol. 277] Q. These tools that are used by the defendant that you are employed by, and which you have described

today, were originally brought here from Texas, were they not?

A. Not these very tools.

Q. Well, ones just like them?

A. Very similar to them.

Q. Well, this style of tool?

A. This style of tool.

Q. And so far as the principles of operation are concerned and the construction, and I am not referring now to the dimensions, they are the same as those employed by the Johnston Company and that you testified to before Judge Bryant?

A. The same general principle of operation. I didn't, however, as I recall it, testify concerning a casing packer in the Texas case.

Q. I am not asking you about the casing packer. I am asking if the tool that you explained down there to Judge Bryant isn't the same tool that you have explained here.

A. I have answered it as clearly as I can, Mr. Lyon, that the tool I explained to Judge Bryant operates on the same principle but it is not the same tool.

Q. It is the same design of tool, isn't it?

A. The same design of tool.

Q. You were cross-examined down there in regard to the explanation that you gave to Judge Bryant, were you not?

A. I believe I was.

[fol. 278] Q. You explained the operation of the tool to Judge Bryant in the same way that you have explained it here, isn't that true?

A. Not in the same detail. I was on the stand in Texas, if I recall, probably not more than 30 minutes or such a matter, and I didn't explain in the full detail that I have explained here.

Q. You did explain the operation of the main valve, didn't you?

A. I believe I did.

I am not certain, but I think I explained the operation of the trip valve to Judge Bryant, and I may have stated the purpose for which the trip valve was used. I would not be certain about it. I explained part of the tool to him and I may have explained the trip valve to him. I don't know that I testified before Judge Bryant that the trip valve is used or employed as a safety factor to make the test more certain, but it is one of its functions.

Q. Tests can be made with the defendants' tester that you have described here without the trip valve at all, can they not?

A. I explained a moment ago to the court—

Q. Just answer the question yes or no.

A. Under ideal conditions; yes. I might explain further that ideal conditions are rarely encountered in drilling wells.

Q. And the defendants' device could be used and tests made without the spring on the main valve, could they not?

A. I don't believe they could.

[fol. 279] Q. Were you asked the following questions before Judge Bryant:

"Q.—Now, the main valve can be opened and closed without the spring but may, in the absence of the spring, open at times when it is intended that it should be closed, isn't that right?

"A.—Yes, sir."

A. Yes. It may be open and closed—

Q. Now, wait just a moment. I asked you if you so testified before Judge Bryant.

The Court: He said yes. Read that question and answer again, Mr. Lyon.

Mr. L. S. Lyon: "Now, the main valve can be opened and closed without the spring, but may, in the absence of the spring, open at times when it is intended that it should be closed, isn't that right?

"A.—Yes, sir."

By Mr. L. S. Lyon:

Q. To clarify this matter, although it may have been already covered, can the defendant's device be used for the purpose of effecting a satisfactory test of the formation if there be no trip valve used or employed there?

A. I would say yes with the explanation that it would have to be under ideal conditions, conditions rarely met with; that it might be possible but it wouldn't be expected and, unless the fluid that was taken in on the test was indicative of its source, that the source of the fluid might be questioned.

Q. If you had no trip valve and were making a test in a well where you had enough shoulder, that is, the difference between the size of the "rat-hole" and the size of the [fol. 280] big hole was sufficient so you could cut the packer very much smaller than the big hole and thereby relieve any possibility of opening up the main valve going into the hole, either by friction or fluid or by a spot in the well or a bridge, so that you could get the tool to the bottom without having the main valve open, could you get a test?

A. Provided I could seat my packer on the shoulder without having the fluid cut the shoulder away, with the same qualifying remark, that, unless the fluid taken in was indicative of its source, there might be some question as to where the fluid came from.

Q. If this valve in the Johnston device, the main valve, was so designed that it could not accidentally be opened going down the hole, you would not need the trip valve, would you?

A. Yes; we would need the trip valve, I feel.

Q. For what purpose?

A. Determining leaks; whether we had made a test or whether we had taken in fluid through a leaky joint.

Q. But for no other purpose?

A. Well, that is one of them.

Q. I am not asking you that. That would be the only purpose you would need it for?

A. If it were not opened accidentally going down the hole—does that include if it would not open while the packer was being seated?

Q. Yes.

A. At this moment I don't think of any other serious reason.

Q. With the form of valve shown in the Simmons patent in suit or in the Halliburton stop cock device a trip valve would not be of any help with the possible exception [fol. 281] of being able to detect a leak in the pipe, is that correct?

A. With the rotating type of valve you would not open the valve in seating the packer, so that you could press it down to a firm seal. I don't think of any reason why you would need it other than detecting leaks in the pipe on the rotating type of valve. There is this qualification, though, if I may make it: In going into a well the bore frequently is not thoroughly straight. In fact, it is very rarely

straight. There are turns in the bore. We think of a well as being a vertical hole but it is not and surveys of a well show that. If some twist in the hole is encountered with the rotating type of tool, which might turn the lower end of that tool, and there are cases I have heard of very definitely in the oil fields where a tool has been into a portion of the hole, and that would tend to rotate it, it might open your valve and then, without a trip valve, your fluid would equalize into the drill pipe.

Q. Have you any knowledge of that ever happening in these 7,000 tests that were made with this stop cock device?

A. I have not been present at any of the 7,000 of your tests, Mr. Lyon.

Q. There is no reason why a trip valve could not be put at the bottom of the drill pipe and used with the Halliburton types of testers or the Simmons original tester, is there?

A. No. The trip valve can be inserted into any string of pipe.

Q. Do you intend that the Court shall understand that the use of a trip valve is the only way you can tell whether [fol. 282] your drill pipe is leaking or not when you are making a test?

A. Not of the trip valve that we have there.

Q. Or any kind of a trip valve or the frangible disc? Do you have to have one of those kinds of devices in order to know whether your drill pipe is leaking? Aren't there other ways that an oil man will know whether his drill pipe is leaking or not?

A. There may be other ways, Mr. Lyon.

Q. Certainly. You know there are other ways, don't you?

A. It would depend entirely on how much it was leaking. I don't know of any other way right now to find out whether one is leaking or not unless the leak is very severe.

Q. You described this in connection with the packer leaking when you were trying to set the packer how you would tell that the mud fluid was leaking by the packer, didn't you? You described that, didn't you?

A. Yes. And the fluid would drop.

Q. Outside of the pipe at the top of the well?

A. Yes.

Q. You could see it go down the well, couldn't you?

A. Yes.

Q. Then, if it is leaking into the drill pipe, can't you see the level of the fluid going down the well in just the same way?

A. A leak——

Q. Just answer that yes or no.

A. If it were leaking fast enough, yes. But it may not be leaking fast enough. A leak in a tool joint might be very hard to see on the joint with the naked eye but under [fol. 283] the pressure that that hydrostatic head has against the joint it might leak considerable fluid.

Q. Wouldn't that be shown on the outside of the pipe?

A. I don't think it would necessarily be recognized. As I explained on that model, in testing in formation that is porous some of the fluid will seep away in the formation and the fluid will lower slowly. That might be mistaken for fluid seeping into the formation.

Q. You put a wet cloth over the drill pipe at the top, don't you?

A. Not while going into the hole.

Q. You could do it, couldn't you?

A. I have done it; yes.

Q. And, if your drill pipe is filling up with mud fluid while you are running into the hole, it would be pushing air out against that wet cloth, would it not?

A. If it were leaking very slowly, it might not be discernible.

Q. But it would have to be a very slow leak?

A. I wouldn't say it would have to be very slow.

Q. How much mud fluid do you think could get into one of these drill pipes without you being able to discern it at the top of the well? Do you know?

A. That is a matter that might be hard to answer, Mr. Lyon. I gave an example a moment ago, where, as I recall, we recovered 200 feet of fluid in a leaky drill pipe. We had to run that string, as I recall it, twice and test each occasion as we went down to find the leak.

Q. I am not asking you that at all. I am asking you how much mud fluid could leak into the drill pipe without you being able to tell at the top of the well it was leaking.

A. I don't believe I could answer that.

[fol. 284] Q. You could determine if there was a big enough leak in the drill pipe to effect the same drop in the level of the mud fluid at the top of the well that you described in connection with the packer leaking, couldn't you?

A. If the fluid fell rapidly enough to know there was a leak, then we would know it; yes. You couldn't know whether it was leaking by the packer or through the drill pipe but you would know it was a leak.

Q. How long has it been that the Johnston tool that you have described has had this trip valve used with it at all?

A. The Johnston device has had the trip valve ever since I have been working with the company.

Q. You referred to patents, or counsel did, on this Johnston tool. The original patents don't describe or call for the use of any trip valve, do they, under which this device is made?

A. I believe the original patent, although I am not sure of this because I haven't studied these patents very carefully, calls for the main valve and that another patent covers the trip valve.

Q. The patent that you referred to on the trip valve that is used in the Johnston tester is limited to a specific construction of a trip valve, that is, it doesn't cover the broad idea of a trip valve, does it?

A. I don't really know.

Q. Well, you do know that it was old in the oil well art long prior to this well tester to use frangible discs that could be broken by go-devils, don't you?

A. That, I think, is right. I gather that from prior publications, that the frangible disc is rather old, old enough [fol. 285] that it was used back in the early—well, I couldn't say the dates but probably in the '80s or along in there.

Q. To insure against fluid getting into the pipe?

A. Apparently with the purpose of running the pipe dry.

By the Court:

Q. Suppose that go-devil does not happen to hit the top of the valve, what will happen?

A. Well, sir, we construct the top of the valve so that the go-devil will hit it.

Q. What is its diameter with respect to the diameter of the pipe?

A. There is very little space left. I don't know the actual figures but it is not the width of the go-devil that is left around it. It is constructed with the idea that, even though the go-devil should rock or hit and bounce from one side to the other, it is bound to hit.

Q. It can't miss?

A. I don't think it can miss. It might in hitting an obstruction be so slowed down that it would not open when it hit it but that rarely happens.

The equalizing valve of the Johnston tool is designed for the purpose of lessening the pull that you have to give the packer to raise it out of the well. The Johnston tester would work without having the equalizing valve feature on the packer. In deep wells and large packers that is a safety factor that is very important. We at times now in the 21½-inch tool, which is smaller than that tool I showed you today, run that without an equalizing valve because there is not a column of fluid to lift. But on the larger packers the pull is very severe and that is why this valve was designed and [fol. 286] put in there. It is an added safety feature in deep wells. I don't believe they use it with the Johnston tool in the Mid-continent.

“Q. There is no reason why that equalizing valve cannot be used on the packers employed with the Halliburton testers, is there?”

A. That could be screwed onto another packer. It wouldn't have to be a Johnston packer in order to screw that valve onto it.” We don't buy our packers with that equalizing feature in them. We make our formation packers and our equalizing valve is separate. I believe Mr. Johnston has a separate patent on that. Olympic packers are casing packers. We run the equalizing valve in addition to the by-pass valve that is in the casing packer. I couldn't say whether the idea of an equalizing valve for a packer is a very, very old idea or not. I am not sure that equalizing valves were described on packers 40 or 50 years ago. I am not sure that I do know that. I haven't studied the patent art a great deal. I know that the drawings of the Halliburton testers that I have seen of the “J” tool type, the recent tool, show an equalizing valve. I presume that the same packer that is used on the “J” tool could be used on the stop cock tool. I don't know the connections there, but I presume it could. The equalizing valve would perform the same function on one tool as on another, but with reference to the stop cock tool I have seen drawings and models, and none of them have shown an equalizing valve with it.

The Court: I think, Mr. Lyon, you asked a moment ago if the equalizing valve could not be used on the Simmons

patent. I don't know whether the witness answered that. I didn't hear his answer.

[fol. 287] By Mr. L. S. Lyon:

Q. It could be, couldn't it?

A. It could be included with the Simmons tool as a separate valve.

Q. As far as this circulating valve which you described this morning is concerned, and which is not illustrated on the diagram that is at the side of you here—

A. May I make another remark with reference to including the equalizing valve on the Simmons device?

Q. Certainly. I can remember that question.

A. In order to do that you would have to rearrange the Simmons device to put your trip valve above the equalizing valve, because you would equalize your flow right into the drill pipe; under the present condition, the way it is made. You see, you have your valve members right on top of the packer, and there is no provision there in the Simmons device for installing an equalizing valve, unless it were installed above that, and that would equalize your fluid into your trapped sample.

Q. But you could see how to incorporate an equalizing valve in the Simmons structure, Exhibit 10, couldn't you?

A. Well, it would have to be installed between your trip valve here and your packer.

Q. But you could do that, couldn't you?

A. I don't know.

Q. Well, you won't say you couldn't?

A. And stay right with the drawings as shown in the patent?

[fol. 288] Q. No. Just take this device and put an equalizing valve with a packer in the device.

A. I could rebuild the Simmons device so that an equalizing device could be installed, but I don't know that I could say that it would still be the Simmons device.

Q. Irrespective of that, you take and change the design of this valve to put an equalizing valve on the packer, couldn't you, irrespective of what you would call it afterwards?

A. A form of equalizing valve on the packer?

Q. Yes.

A. There is one shown, I believe, similar to that arrangement, on the Halliburton "J" tool drawing, isn't there?

Q. Well, I am saying you could do that if you wanted to?

A. I could try to do it, anyway.

The circulating valve in the Johnston tool is another safety feature. If one wanted to sacrifice the safety feature, it could be eliminated from the valve, but it wouldn't be a safe tool, I would feel, to run. I don't know that the Johnston tool was run for a long time without the circulating valve. I am under the impression that the circulating valve is shown in the Johnston patent drawings. I may be wrong about that. I couldn't tell you in what percentage of tests with the Johnston tool we have to pump the drilling fluid down the drill pipe and lose the test. It happens rather often, though.

Q. How often—in 10 per cent of the cases?

A. I don't know that I could tell you in percentage.

[fol. 289] Q. How many times have you ever been on a well when it has been done?

A. I am not sure that I have ever personally had to use that valve, to pump through it, but it has been used in our work a great deal.

The Court: What are you talking about now?

A. The circulating valve, the one that we pump through. That spoils the test when we pump through it, but it is a safety factor in getting the tool out of the hole or in controlling the hole.

By Mr. L. S. Lyon:

Q. If you have to use that circulating valve then the test operation is spoiled?

A. Your recovery of the sample is spoiled, but that is—the circulating valve is a valve that I am frequently asked about in dealing with new customers. They want to know if I can circulate through that tool.

Q. How long has your company called this main valve of the Johnston tester the main valve?

A. Well, I don't know when that was named the main valve. It was called the main valve when I went to work with the Johnston people.

Q. And it has always been called the main valve, hasn't it?

A. I don't know what it was called prior to that time. I know they were calling it the main valve when I went there. My impression is that that was the first valve put in the tool, and they called it the main valve from that.

Q. You couldn't leave that valve out of the Johnston tester and successfully take tests, could you, and recover an entrapped sample?

A. No. In the present design I would need the main valve to recover an entrapped sample.

[fol. 290] Q. The way the operator opens that valve from the top of the well is by downward movement of the drill pipe; isn't that right?

A. Let the pipe down on this to open it.

Q. And the way he closes that valve is by an upward movement of the drill pipe at the top of the well; isn't that correct?

A. That is not always correct, Mr. Lyon.

Q. Is it ever correct?

A. Not always correct. That valve will close by the spring without the movement of the drill pipe, if anything happens to the shoulder that the packer is sitting on.

Q. If the packer slips away and does not hold its seat, then the valve will close?

A. That is right.

Q. But I mean, in order to close the valve at the end of the test, in the normal operation of the tool, the operator lifts—

A. He picks up on the pipe slowly, and the spring closes that valve.

Q. The valve head in the main valve is attached integrally to the drill pipe, isn't it?

A. It is screwed into the mandrel, and the casing member that holds the mandrel, that is screwed into the trip valve.

Q. And that valve head can't move up or down any faster or any slower than the drill pipe moves up or down; isn't that correct?

A. Any slower?

Q. Or any faster.

A. It moves faster.

[fol. 291] Q. Than the drill pipe?

A. Than the operator moves the drill pipe at the surface.

Q. Then something else has to move the drill pipe except the operator; is that right?

A. The operator picks up the drill pipe, and in so doing, in a long string of drill pipe there is a stretch—by a mark put on there at the rotary table it would pick up 18 inches before the drill pipe would leave bottom—and that puts a stretch on the drill pipe, and enough weight is lifted off of the spring so that the spring actuates the valve and takes up some of that stretch.

Q. What does the spring actuate? The spring is mounted there between the slideable part that carries the packer and the fixed part that is attached to the drill pipe?

A. Yes.

Q. Does that spring push the drill pipe up the well?

A. It merely takes up a portion of the stretch that the driller has pulled into the pipe.

Q. It actually pushes the drill pipe up out of the well, does it?

A. I didn't say that. I say it takes up some of the stretch that the driller has pulled into that pipe in lifting on the pipe.

Q. When the driller stretches that drill pipe does he stretch it—

A. He lifts the weight off of the spring and the spring actuates.

Q. How strong a spring is that?

A. That spring varies with the different sized tools. It takes about 15 or 20,000 pounds to compress the spring. It is a very strong spring.

[fol. 292] Q. Do you say that that spring can lift the drill pipe in the well?

A. I didn't say that it lifted the drill pipe.

Q. In order for that main valve to close, the valve head must move up to the valve seat; isn't that correct?

A. That is correct.

Q. And the valve seat can't move down to close the valve?

A. No. The valve head moves up to the seat.

Q. And the spring is holding—

A. Let me qualify my last answer.

Q. Yes, surely.

A. I presume you are talking now about when we finish the test and in trapping the sample?

Q. That is right.

A. The valve seat will move down to the head if the packer fails or if it passes through an obstruction.

Q. With the packer seated properly at the moment when you want to close the valve to bring your sample out of the well, you have got to close the valve by the valve head moving up?

A. That is right.

Q. That is the only way it can be done?

A. That is right.

Q. And that valve head is integrally fixed to the drill pipe, isn't it?

A. Yes; it is screwed into the tool, which is screwed to the drill pipe.

Q. Then the only way that the spring could snap that valve head shut, or snap it closed, would be to snap up the drill pipe, isn't it?

A. No. The driller has picked up the drill pipe and has a stretch in the drill pipe.

[fol. 293] Q. I am not asking you that. Answer the question yes or no.

The Court: Answer the question by yes or no, and then make your explanation.

A. No. It does not lift the drill pipe.

By Mr. L. S. Lyon:

Q. To snap the valve closed you have got to snap up that valve head, do you not?

A. Yes.

Q. If that can only move with the drill pipe the drill pipe has got to snap too, doesn't it?

A. There is a vibration felt on the drill pipe at the surface many times when that is done.

Q. Sometimes not?

A. Sometimes it is overlooked.

Q. As a matter of fact, that valve could be closed by lifting up the pipe to pull up the valve head without the snap being there, couldn't it?

A. It could be closed. It couldn't be kept closed, probably. It could be pulled together.

I would say that the tests made by either a Halliburton stop cock device or with the Simmons device would be uncertain. I don't know that they would be equally uncertain. I would say that both would be uncertain. I don't mean to testify that a successful test cannot be made with an uncertain tester. I mean it might take a test on one run and

on the next run it might not. The certainty of a test of that kind would depend largely on how indicative the fluid was that was taken in the test. If I ran a tester and recovered a couple of hundred feet of oil through the operation, I would consider that I had made a successful test.

[fol. 294] Q. And you can't see any reason why the Halliburton stop cock device or the device shown in the Simmons patent wouldn't enable you to do that if the oil was there, can you?

A. No. If you recovered an indicative fluid I would say your test was successful.

Q. Then what you actually mean in your testimony is that you think the Simmons device is uncertain or the Halliburton stop cock device is uncertain because, where you wouldn't get any sample at all, it may have been due to one of these difficulties that you have described; is that right?

A. I mean to imply that many times a test will recover mud and the fluid will not be indicative, and in such cases the source of that fluid might not be known.

If gas comes through to the surface it is reasonable to expect that it came through your tool, and I would say the tool worked, and if you got oil or definitely got salt water. Many, many tests, however, are what we term negative tests, and this would lead you to confusion. We very frequently make re-runs when we get a negative test, just to be sure that we haven't made any mistake.

Q. You do have difficulties with your tester, as far as 100 per cent accuracy is concerned, don't you?

A. I wouldn't say it was ever 100 per cent. We do have difficulty at times, but we feel that we know pretty well that we have made a test. Once in a while we have to go back and check it, not very often.

Q. You think that because of these safety features of your tool, principally the trip valve, that you are more certain in the case of a negative test than Halliburton would be [fol. 295] in the case of the Simmons device or the stop cock device; is that correct?

A. I am sure I would be more certain of the results obtained in running the Johnston device than I would be in running the stop cock or Simmons device.

Mr. L. S. Lyon: I am going to ask the reporter to read the question I just asked you, and will ask you to answer it yes or no.

The Witness: All right.

(Question read by the reporter.)

A. Yes, that is correct. I would be more certain of it.

Q. In your description of a testing operation you described rather completely the whole operation, involving the lowering of the tester on the drill pipe and how the drill pipe is made up and how it is handled and the complete operation. How much of that operation is performed by your company and how much of the labor involved in performing the operation is furnished by your company?

A. We send out one man with the tool I have shown there and the oil company—

Q. Exhibit D?

A. Well, I don't know the number.

Q. It is the one here on the floor?

A. Yes. It is that 3-inch tool there on the floor. And the oil company that we are running for furnishes the rotary crew that performs the labor of running the device into the well, they furnish the drill pipe and everything except the testing tool, and our man supervises the hooking up of the testing tool and the operation of it.

[fol. 296] Q. Does the oil company retain the control of its own men and the direction of its own men, the supervision of its own men, during the test?

A. Yes, they do. If an emergency would arise they might ask us what we had best do, and then they would direct the men to do what we said about it. It would depend on the man in charge, really. He would have the authority to step in and take charge in an emergency.

Q. In an ordinary operation, though, he doesn't assume charge of the drilling crew, does he; your man, in an ordinary testing operation?

A. In the ordinary testing operation he will leave it up to the man we send out to handle that.

Q. I mean your man doesn't direct the oil company's employees how they shall run the draw works or how they shall make up the pipe or how they shall operate the steam, or any of the usual operations on the well, does he?

A. No, not in the usual, ordinary operations; only in just what is connected with the testing. He would supervise the setting up of the joints so that they wouldn't leak, and if the operator was running the tool in too rapidly he would ask him if he wouldn't slow it down a little bit.

Q. Does the testimony that you have given as to what is furnished in the line of equipment and materials by your company, as compared with what is furnished by the oil company, apply to the tests that have been made with the Johnston tester for the Honolulu Oil Corporation?

“Mr. Boyken: If your Honor please, I object to that question and all other questions concerning the Honolulu Oil Company, on the ground, first, that it is not proper cross-[fol. 297] examination, and, second, that opposing counsel has rested his case as against the Honolulu Oil Company, one of the defendants in this case.

The Court: Overruled.

Mr. Boyken: An exception.

The Court: Yes.

Mr. Boyken: And without repeating that, may I ask that it be considered with respect to all this testimony?

The Court: Yes.

A. Yes, that is general procedure with us. We send out the tools and one man.

Q. And they furnish the rest of the equipment and the rest of the men?

A. They furnish the drill pipe, the draw works and the derrick, just as though they were running a bit into the hole. We have supervision of it to a certain extent. There has never been a clash on the rig that I know of. I don't know what would happen if we did run into that.

Q. Then, as an actual fact, your men and your equipment work jointly with the oil company's men and the oil company's equipment in taking the test; isn't that correct?

A. Well, I suppose they do work together there.

The Court: They co-operate?

A. They co-operate, yes.

By Mr. L. S. Lyon:

Q. And the oil company pays you a certain amount of money in connection with the services that you rendered or that your company rendered and the furnishing of the tester for that purpose; is that correct?

A. Yes.

[fol. 298] Q. Do you have any form of written contract with the oil companies for these jobs?

A. Well, the boy that goes out to run the tester has what we call a ticket book, in which the test is written up, and the

oil company representative on the rig, when the test is finished, signs the ticket, and he keeps a copy and we take a copy.

Q. Can you produce a specimen of the form that is used?

A. I haven't one with me. It is the customary procedure, I think, on all tools, service in the oil field, that when they finish the work the company man just signs the ticket, and later on you get a field order for it and include that with the invoice.

Q. All the tests that were made on any wells of the Honolulu Oil Corporation, using the tester of your company, were made on that same basis, were they?

A. As far as I know.

We have at times left the testing tool out at the well and let the oil company run it all alone. However, we try to have a man present when it is run. I believe that we have left a testing tool to be run by the Honolulu Oil Corporation without having a man present while the tool was being run. It is part of my selling work, really, to explain the testing tool to the oil companies and try to get some business on it.

Q. The Honolulu Oil Company has known how this tester was constructed and how it operated before it was used on their wells; isn't that correct?

Mr. Boyken: I object to that, if your Honor please, to inquire of this witness as to the knowledge the Honolulu Oil Corporation has. It is totally irrelevant to any issue here, and it is not cross-examination, further.

[fol. 299] Mr. L. S. Lyon: I want to bring out, your Honor, that the things he testified to here today, about the operation of this tool and how it was constructed, were made known to the Honolulu Oil Corporation, the other defendant, before the tool was run by the Honolulu Oil Corporation.

The Court: Sustained. It is not proper cross-examination.

Mr. L. S. Lyon: May I take the answer for the purpose of the record, your Honor? An exception.

The Witness: Am I to answer that?

The Court: What was that you asked?

Mr. L. S. Lyon: I asked for an exception, and asked if I could take the answer for the purpose of the record, subject to the exception.

The Court: Did your objection come before the answer or did he answer?

Mr. L. S. Lyon: We haven't had the answer yet.

The Court: I am not clear on just what you are asking.

Mr. L. S. Lyon: As I understand it, it is proper, if an objection is sustained to a question, to take an exception and ask that the answer be received, solely for the purpose of the record.

The Court: To see what the inquiry, if permitted, would amount to?

Mr. L. S. Lyon: Yes.

The Court: That is a new proposition.

Mr. Boyken: I have never heard of that, your Honor. It is done before masters, but I have never heard of it being done before a Federal Judge. Occasionally there is an offer of proof, but not the taking of an answer to a question where the objection has been sustained.

[fol. 300] Mr. L. S. Lyon: The equity rules provide for it, if we have the equity rules here.

The Court: They are on my desk, I think.

Mr. Boyken: I have no objection to it, your Honor, except that I am unfamiliar with that practice.

Mr. L. S. Lyon: The matter has been up in our Circuit Court of Appeals and has been up in the Tenth Circuit Court of Appeals in cases that I am familiar with, and it is rather an unusual rule; but it is one that the Circuit Courts of Appeal seem to insist on rather vigorously, and that is that in an equity case the record shall come up complete to them, so that, if they decide that an objection should have been overruled or sustained, the record shall be there before them of what the answer would have been. Of course, that can be carried, I suppose, to absurd limits. Let me take the rule. This is Equity Rule 46:

"In all trials in equity the testimony of witnesses shall be taken orally in open court, except as otherwise provided by statute or these Rules. The court shall pass upon the admissibility of all evidence offered as in actions at law. When evidence is offered and excluded, and the party against whom the ruling is made excepts thereto at the time, the court shall take and report so much thereof, or make such a statement respecting it, as will clearly show the character of the evidence, the form in which it is offered, the objection made, the ruling, and the exception."

Now, there are cases here in the footnote applying this rule. I was looking for the decision of our Circuit Court of Appeals construing it, but I don't—

The Court: Is it your recollection that the precise question has been passed upon by the Ninth Circuit?

[fol. 301] Mr. L. S. Lyon: Yes; I think it was, in a case cited here, although I would want to look at the case, but it is my recollection it was this case of Presidio Mining Co. et al. v. Overton et al., 270 Fed. 388, and it was passed on at length by the Tenth Circuit Court of Appeals.

The Court: Is not this the situation: This action is brought against both the Johnston Company and the Honolulu Oil Corporation; they have been charged jointly with the infringement. The witness in his direct examination was not questioned regarding any operation by the Honolulu Oil Company. He did say that his company did certain work. On cross-examination he was required to say to what extent that practice prevailed, that is, how much of the work his company did and how much of the work the patrons or employers of his company did, and he was asked further, and required to state, whether that custom prevailed with respect to the Honolulu Oil Corporation. Now he is asked—what is he asked?

Mr. L. S. Lyon: He testified this morning and explained how this Johnston tool is constructed and how it operates. The Honolulu Oil Company in its answers to interrogatories admits that it has employed the Johnston people to use this particular tool. I don't know whether this witness was called as a witness for both defendants or just one of them alone, but I am asking him now if the things that he testified to this morning, as to how this tool was made and how it is operated, if the same things that he told us were made known to the defendant Honolulu Oil Corporation before the tool was run in their wells. I want to show that they had knowledge, before the tools were run, of the very things that the witness has testified to today, as to how the tool [fol. 302] is made and how it is run. That is the sole question.

The Court: Yes, but do you not say that, in answer to the interrogatories, the Honolulu Oil Corporation admits the use of them?

Mr. L. S. Lyon: Yes.

The Court: Well, that is all you can show, isn't it?

Mr. L. S. Lyon: I would like to show, if your Honor will permit me, that this Honolulu Oil Corporation knew, before it ran the tool, how the tool was constructed and how it operated.

The Court: Would that make any difference?

Mr. L. S. Lyon: There are some decisions here to the effect that if it was true that this was an independent contractor and that it was not a joint operation, that if the proprietor had knowledge of how the instrument was made and how it worked, he is chargeable and liable for its use for him by the contractor, whereas, if he doesn't know of it, what it is, he may not be, if it is a case of pure independent contractor.

The Court: My view is that it is not proper cross-examination, not related to the direct testimony of the witness sufficiently to entitle it to admission as cross-examination. I think, however, that the purpose of the rule is accomplished without the answer being made. The rule seems to require that enough be shown so that the upper reviewing court will clearly understand the situation presented. The court will easily understand from the statement made what the question presented is. It is a new proposition to me, I confess. I don't ever recall seeing it put in practice. [fol. 303] Mr. Boyken: I have never seen it.

The Court: I will withhold that ruling for the present time, and I will examine the cases.

Mr. L. S. Lyon: I would like to make one further observation, your Honor.

The Court: Yes.

Mr. L. S. Lyon: In connection with the order of proof which Mr. Boyken is objecting to, of course that is within the discretion of the court, and here we have an unusual situation. The answers of the defendant Honolulu Oil Corporation to the interrogatories admitted the use of this Johnston tester. There was no pleading in the answer to the bill of complaint whereby the Honolulu Oil Corporation said it was not liable but that only Johnston was liable, on the ground that Johnston was an independent contractor, no such defense set up. Mr. Boyken made no opening statement at the outset of this case and waited until our prima facie case was closed, and then for the first time he announces that he is going to claim that the Honolulu Oil Corporation is not liable for its use because the Johnston Company is an independent contractor. Now, I think under those circumstances the court is entitled to give us a chance to bring out the true facts in regard to that.

The Court: Well, would it make any difference, provided they actually used the thing? Isn't that all you want?

Mr. L. S. Lyon: That is all, really, yes. If they are actually jointly operating this tool, then of course the Johnston Company is not an independent contractor, and the oil company is equally liable with the Johnston Company. [fol. 304] The Court: Is it your view that if they are independent contractors then the Honolulu Oil Company would not be liable?

Mr. L. S. Lyon: Unless we can show that the Honolulu Oil Company understood and knew in advance how the tool was constructed and how it worked.

Mr. Boyken: I don't think it makes any difference what their knowledge is.

The Court: I am going to assume that the witness would say that they did, but I am going to sustain the objection on the ground that it is not proper cross-examination. I believe that is the correct rule. What is that Rule?

Mr. L. S. Lyon: Equity Rule No. 46, your Honor. This is your book.

(The following were then offered by defendants and received in evidence:)

Patent No. 46,124, to Lyons, as Defendants' Exhibit H-1.

(Book of Exhibits, p. 316.)

Patent No. 56,234, to Latham, as Defendants' Exhibit H-2.

(Book of Exhibits, p. 320.)

Patent No. 58,837, to Kewley, as Defendants' Exhibit H-3.

(Book of Exhibits, p. 324.)

Patent No. 68,350, to Burr & Wakelee, as Defendants' Exhibit H-4.

(Book of Exhibits, p. 328.)

[fol. 305] Patent No. 73,577, to Carll, as Defendants' Exhibit H-5.

(Book of Exhibits, p. 332.)

Patent No. 182,098, to Birge, as Defendants' Exhibit H-6.

(Book of Exhibits, p. 336.)

Patent No. 208,610, to Koch, as Defendants' Exhibit H-7.

(Book of Exhibits, p. 339.)

Patent No. 249,228, to Dower, as Defendants' Exhibit H-8.

(Book of Exhibits, p. 343.)

Patent No. 263,330, to Franklin, as Defendants' Exhibit H-9;

(Book of Exhibits, p. 347.)

Patent No. 582,828, to McGregor, as Defendants' Exhibit H-10.

(Book of Exhibits, p. 351.)

Patent No. 785,933, to Bloom, as Defendants' Exhibit H-11.

(Book of Exhibits, p. 355.)

Patent No. 1,000,583, to Cooper, as Defendants' Exhibit H-12.

(Book of Exhibits, p. 359.)

[fol. 306] Patent No. 1,347,534, to Cox, as Defendants' Exhibit H-13.

(Book of Exhibits, p. 365.)

Patent No. 1,474,630, to Halliday, as Defendants' Exhibit H-14.

(Book of Exhibits, p. 369.)

Patent No. 1,510,669, to Halliday, as Defendants' Exhibit H-15.

(Book of Exhibits, p. 374.)

Patent No. 1,514,585, to Edwards, as Defendants' Exhibit H-16.

(Book of Exhibits, p. 386.)

Patent No. 1,522,197, to Macready, as Defendants' Exhibit H-17.

(Book of Exhibits, p. 391.)

Mr. Richmond: That Lyon patent was not pleaded. What was the second one you called?

Mr. L. S. Lyon: Latham.

Mr. Richmond: That isn't pleaded.

Mr. L. S. Lyon: Those two that you speak of that are not pleaded, that is, Exhibits H-1 and H-2, I understand are not offered for the purpose of anticipation?

Mr. Boyken: We will simply offer the first two to show the state of the art. I believe that they were mentioned in the expert's affidavit in opposition to the motion for preliminary injunction, so that they are not unknown to [fol. 307] the plaintiffs, but apparently they are not pleaded in the answer.

Mr. L. S. Lyon: And the same is true, I guess, as to H-17, the patent to Macready.

Mr. Boyken: We will offer the patent to Macready merely to show the state of the art, but that also is not unknown to the plaintiffs.

The Court: This applies to the first two?

Mr. Boyken: To the first two, H-1 and H-2, and also to Macready, which is H-17.

The Court: And also to what?

Mr. Boyken: To a later patent to Macready, which is H-17.

The Court: That is, No. 1,522,197 is not pleaded?

Mr. Boyken: It is apparently not pleaded as an anticipation.

The Court: So those three you are offering to show the state of the art?

Mr. Boyken: Yes, your Honor; and all the remainder to show the state of the art and also as anticipations.

We also offer in evidence portions of certain publications. The publications are here in the original form and are available to opposing counsel. I understand that opposing counsel has gone over these and will stipulate that we may offer in evidence photostats of certain pages of these publications, and I have those pages here, and I would like to put in the photostats of these certain pages, and the original publications are here.

In that connection I offer in evidence certain reports made by a man by the name of J. F. Carll in 1877, and [fol. 308] the pages have heretofore been designated, from publication II, being pages 126, 127, 128, 129, 130 and 131.

From another publication or report by the same man, entitled "Oil Well Records," also published in 1877, pages 196 and 197.

And an additional report by the same man, all bound together, I believe, pages 192 and 193; and then skipping over in the same report to pages 232 and 233; and skipping over to pages 263, 264, 265; and skipping over to page 294. That is the end of that chapter.

Then Chapter 29 of the same man's report, pages 311, 312, 313, 314, 315, 316, 317, 318, 319, and continuously up to page 324, with certain plates, which are really photostats, at the end thereof, there being two of those.

Mr. L. S. Lyon: Mr. Boyken, are you going to offer all of these pages about this subject that are written by this man Carll, under one exhibit?

Mr. Boyken: I thought it would be convenient to put all these publications that we rely upon under a separate cover, and I have done so, and these are what we consider the important pages, and I merely photostated certain pages of these publications and included those photostats under this cover, and I want to offer whatever is here under this cover.

Mr. L. S. Lyon: But I mean, are you going to give the separate materials separate exhibit numbers, like you did in the case of the patents?

Mr. Boyken: Yes; I think we will do that. I will offer the publications as Exhibit I, and the portion under that cover, which consists of various reports of Mr. Carll, as Exhibit I-1, I presume. The originals, your Honor, are included under this cover here. I may say that these Carll [fol. 309] reports are bound together in a publication called the "Second Geographical Survey of Pennsylvania, 1876 and 1877," and the title page says, "Oil Well Records and Levels, By John F. Carll." I will give the original publications to opposing counsel for his examination. We have furnished opposing counsel with a corresponding photostatic copy.

(Book of Exhibits, p. 396.)

Mr. Boyken: The next publication bound under the same cover is that of S. F. Peckham, entitled "Productive Technology and Uses of Petroleum and Its Products." That was published in 1880. We offer Plate XXIII, consisting of two drawings, and pages 6, 7, 12, 87, 88, 89, 90 and 91,

together with Plate VI. That will be Defendants' Exhibit I-2.

(Book of Exhibits, p. 430.)

Mr. Boyken: I offer in evidence as Defendants' Exhibit I-3 portions of a publication entitled "Fifth Annual Report of the United States Geological Survey to the Secretary of the Interior, dated 1883, by J. W. Powell, Director." The portions of that that we offer in evidence consist of the report of a man by the name of Chamberlin, and the pages are 157, 158, 159, 160, 161 and 162. I have the original of those here. I will ask now that these publications be so marked.

The Court: I understand that you have assembled there photostats of the pages that you have just offered in evidence?

Mr. Boyken: Yes, your Honor.

The Court: All right.

(Book of Exhibits, p. 441.)

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[fol. 310] JAMES M. ABBETT, called as a witness in behalf of defendants, being first duly sworn, testified as follows:

Direct examination.

By Mr. Boyken:

My name is James M. Abbett. I am 47 years of age. I reside in Pasadena, California. I am by occupation or profession a patent solicitor. I maintain an office in Los Angeles, and have followed that occupation or profession for 20 years.

Q. Please state your qualifications enabling you to testify as an expert witness in this case.

A. In 1907 I graduated from Manual Training High School in Indianapolis, Indiana.

Mr. Boyken: Pardon me just a moment. Would Mr. Lyon admit Mr. Abbett's qualifications? That would save time.

Mr. L. S. Lyon: Well, I will do this, admit that he is an experienced patent solicitor and has testified in patent

cases as an expert witness. I don't believe that he claims to have any practical operative experience as to these tools at all, but as far as testifying as a patent solicitor or familiar with reading patents, I will admit that he is qualified to do that. I think that is all that he claims to be qualified to do.

Mr. Boyken: That will considerably shorten the matter.

[fol. 311] By Mr. Boyken:

Q. I just want to ask Mr. Abbett, though, what experience he has had with the oil well industry and patents that apply to that industry.

A. My practice, which is conducted under my own name in Los Angeles, is at the present time almost exclusively concerned with the oil industry. I handle the patent work for C. F. Braun & Company, which is concerned with oil refining, absorption plant work, gasoline production. I handle the patent work for Martin Decker, who makes the weight indicators used on practically all well drilling equipment. I handle certain work for Baash-Ross Tool Company, who are exclusively manufacturers of oil tools, making principally well jars. I handle oil well surveying work for Hewitt & Custer, of Long Beach, which is concerned with the problems of surveying the deviation of well bores during the drilling of wells. I have handled drilling tool work for Abegg & Reinhold of Los Angeles, and other miscellaneous clients concerned with various special tools in the industry. In connection with that work it is necessary for me not only to be familiar with the reading of patents but all of the patents on those subjects that I file in my office are prepared and prosecuted by me, and it is necessary to examine the tools, visit the wells in which they are used, and to become generally familiar with their use and operation and construction in order to properly present the cause of the clients.

Q. Have you studied the Simmons patent here in suit?

A. I have.

Q. Are you also familiar with the defendant's device?

A. I am.

[fol. 312] Q. Have you been in court during the testimony of Mr. Halliburton?

A. Yes.

Q. Since the trial of the Texas case have you made a further art search?

A. Yes.

Q. With respect to the Simmons patent?

A. With respect to the art with which the Simmons patent is concerned.

Q. Just where did you search in that connection and how was it done?

A. I had previously caused to be made in Washington a search of the Patent Office records, searching for patents pertinent to the subject, and since the trial in Texas I have had searches made of the technical literature particularly to ascertain the common practice of well-drilling at the time of the Benjamin Franklin patent, which is a patent we will be particularly concerned with here. I have also had the opportunity to make a personal search myself through the complete files of patents with which this subject is concerned in the records of the Union Oil Company, patent department, Los Angeles, and as a result have accumulated the exhibits which have just been presented.

Q. What principal elements in the Simmons patent did you search for in the prior art?

A. In searching the prior art relative to the Simmons patent I searched for a packer adapted to be placed in a well bore to seal off the materials above the packer from those below it, a valve controlling a passageway through the packer from the area sealed off below through the valve, and a pipe carrying the packer and the valve and into which the fluid passing through the passageway of the [fol. 313] valve and the packer would be introduced from the sealed off area beneath the packer within the well.

By the Court:

Q. What do you call that? Introduced from the what?

A. The sealed off area beneath the packer into the well, within the well.

By Mr. Boyken:

Q. That is, the packer seals off the two portions of the well?

A. Yes, and makes a testing zone beneath the packer and an area or length of bore above the packer within which the drilling fluid is contained and excluded from the testing zone.

Q. That is, so as to exclude the drilling fluid from the portion below the packer which is to be tested?

A. Yes.

Mr. Boyken: I think we had better take up the prior publications first because they are considerably shorter. And in doing so I want to point out to your Honor that one of the patents we rely on in this case rather heavily is a patent to a man by the name of Benjamin Franklin, and the date of that patent is 1882. It was issued August 29, 1882. That is one of the principal patents. We will come to that later on.

The Court: What is its number?

Mr. Boyken: It is No. 263,330. It is in evidence as Defendants' Exhibit H-9. I would like to pass up to your Honor the patents and the publications. I don't think you will have to give a great deal of consideration to the publications, as I will ask the witness to state the substance of them, but the patents I think your Honor would perhaps like to follow.

The Court: Very well.

[fol. 314] Mr. Boyken: The date of this publication we are first going to consider is about the time of the Franklin patent.

Q. Mr. Abbett, will you briefly state the substance of the various reports of Carll in evidence here as Defendants' Exhibit I-1 and the pertinency of these publications with respect to the subject matter of this litigation?

A. The Carll publications were prepared for the State of Pennsylvania and were reports collected in an attempt to preserve the records of the early Pennsylvania well operations and to aid the operators in further work. They show the methods used in drilling at that time. They show that it was a common thing to introduce a tube into the well to any point in its depth and the tube carrying a packer which at that time was a rather primitive affair. They called it a seed bag. It was a leather bag that was filled with seed and fastened by string onto the tubing that was lowered into the well, and when it reached the point of shut-off or seal the liquid in the well caused the seed to expand and to effect a packing action at that point.

The Carll report also shows that mechanical packers were coming into effect at that time, and by mechanical packers I mean a packer which would be mechanically set, at the option of the operator, at any point in a well and

released and withdrawn with the tubing when desired. A form of mechanical packer which is shown in the Carll publication appears as part of the exhibit, and is a structure shown in the lower part of the photostat of Plate XXXIX. And here it will be seen that a threaded connection on a mandrel was disposed below the packer to carry any amount of tubing necessary, and that a threaded connection on top of the mandrel was provided to carry [fol. 315] tubing to connect with the tubing above, and that there was a conical member in connection with the threaded member at the top portion of the tubing which, when let down against this expandible rubber sleeve, would act as a cone and spread that out in the hole to pack. Then, when they wanted to release that, they pulled up on this member, allowed the expanding cone to retract from the bore within that rubber cone, and the rubber would reduce the diameter of the packing element so that the structure could be withdrawn from the hole.

Q. What portion did you say was the packing element? By what number is that designated?

A. The packing element is designated on the photostat as No. 2, the upper element is No. 1 and the lower element is No. 3.

Q. And what portion actually did the packing?

A. Element No. 1 as connected with the string of tubing which extended to the top of the well performed the expanding action, and portion No. 2 actually contacted the wall of the formation to form the seal.

Q. Was that something like the little model that I now hand you?

A. Yes. We had a small model of this made in accordance with the photostat which I have shown your Honor and in accordance with certain patents that we found, and it shows that this device was patented November 30, 1875. The rubber packing element, referring to the model, is the cylindrical member designated in the photostat as 2. There is this cone member above it which has a threaded connection connecting to the tubing extending to the top of the well, and there is the threaded connection below the packing element which would connect with the tubing or [fol. 316] anchor pipe which extended to the bottom of the well and formed a stop for the tubing structure, so that when weight was put on at the top of the well this member would slide within that and expand it and make a packing action,

and so that when this was lifted again this member would contract to allow the entire structure to be withdrawn from the well.

Q. Does Mr. Carll in his publication state why he wants to operate a packer in a well?

A. He states why they operated packers in a well. They operated them for several purposes, as stated in this publication. One was to pack off the outer casing, which was a tubular metal lining lowered into the well, and they attempted to lower that casing to a point below the point at which water would come into the well, and then they put packers on the outside of the casing, between the casing and the well bore, so that any water that would otherwise flow into the bore from above or the strata there would be excluded from the bore that was drilled below the end of the casing and thus out of the water zone. Seed bag packers and mechanical packers were used for that purpose. Then Carll shows that they wanted to lower a tube in the well when it was necessary to ascertain whether or not they drilled a bore down below the water line in the well, and in doing that they would lower a tube, set a packer and see if they could get a flow of the well up through the tube and what that material would be. He, in connection with that matter, calls those tests. And we find specific records here of the history of various wells as they were drilled, showing, for example, on page 131, that Well No. 17 was a wet hole, which meant that it had fluid in it, which no attempt was made to exclude, and that seed bags were used at 365 [fol. 317] feet and 465 feet, at two different points. Then we come to the log of Well No. 29, which states that it was a wet hole. They found water at 13 feet, 37 feet, 53 feet, 95 feet, 400 feet and 738 feet. They found gas at 248 feet, 270 feet, 435 feet, 630 feet and 800 feet, which indicated that while they were drilling that well they were continuously exploring the territory into which the hole was being projected, and that from time to time they made some sort of an observation that there was water at those levels and gas at these points. In that well, on the same page, page 196, he states that they were drilling a wet hole and that they tested at 634 feet and again at 473 feet.

Q. Just go over those briefly. Is there any other point in the Carll publication that you desire to refer to?

A. I think I should complete the answer, completely answer the question as to the various things that Carll

shows. The other use for a packer which he shows is to use the packer on a production tube and by production tube we mean when the well is in the course of being drilled or has been finished that a tube of pipe is lowered down so that you could pump through it and cause the well to produce. And he also shows that packers were used on this type of operation to seal off the area above the packer so that they could pump and produce from the area within the well below the packer.

Q. Does this model which you have referred to correctly show the type of mechanical packer that is disclosed in the Carll publication?

A. Yes.

Mr. Boyken: We offer it in evidence and ask that it be marked Defendants' Exhibit J.

[fol. 318] The Clerk: It is admitted, your Honor?

The Court: Yes.

The Clerk: Defendants' Exhibit J.

By the Court:

Q. You said that the object of this device was to shut off the water above so that the substance below could be pumped up?

A. Through the center tube; yes. And in that connection the—

The Court: Was this tube to be placed in the well itself or within the casing?

A. It was placed within the well itself.

The Court: Was it in direct contact with the formation?

A. Yes. And, if your Honor please, we have an enlarged drawing taken from this report and it is in evidence, which shows the method and shows the packer in contact with the formation. That is the Three Oil Wells.

The Court: The rubber portion itself is not conical-shaped?

A. No. The rubber portion is cylindrical.

By Mr. Boyken:

Q. Let's take the time now, Mr. Abbett, to explain that a little more fully. Is this one of the drawings shown in the Carll report?

A. Yes.

Q. That is entitled "Sectional Drawing of Three Oil Wells." Will you explain the location of the packer with respect to that particular drawing?

A. Carll in making these drawings for the Second Geological Survey of Pennsylvania was showing the progressive types of practice at those times in the Pennsylvania fields, and he has broken away here, for sake of convenience, the drawing so that the essential parts of the structure could be [fol. 319] shown, without making a long drawing; and those spaces appearing here are of indefinite length so that these portions here are at some great distance from each other within the well bore. This shows that he has set an outer casing down here to bedrock.

Q. You are referring to Figure 1 at the extreme left-hand side, are you?

A. At the extreme left. And within that he has run a tube, through which he intends to produce, and he has his pump mechanism down here, with the pump rod running up the tube, so that as that reciprocates the oil will be elevated from the oil sand. He shuts off at a point intermediate the ground, and the oil sand is shown here in what he calls the seed bag section, and he places on there a packer which is there shown as pressed against the formation to exclude anything that might be above that packer from the area below from which he is going to produce. He selects the position of that packer as he sees fit and presses against the formation. In this particular device here, Figure 2, he has gone a step farther and has placed an outer casing which sets there or, as they say, it is landed there on that shoulder. Then he made a reduced bore the same as he made here, but in this one he put in another casing and came down here below the water, and he put a seed bag on it and also a mechanical packer. Carll explains that the reason they used those two packers was that the seed bag might eventually deteriorate, as they wanted to keep that in the well, so he packed off there and ran his tube on down the well. In this particular device the packer is used on the casing. In this particular device it is used on the tube through which any fluid from below the device or excluded area is drawn upwardly, and which [fol. 320] packing structure sets on a formation or against it. In this device here, which is Fig. 3, he merely shows another form of a well having a casing and with the pump structure in it. He has the seed bag area the same as

he has over here, the seed bag area being the area in which it was determined to pack off all of the fluid in the well above that area from the area of the well beneath it.

Q. Is the seed beg a form of packer that was known at that time?

A. Yes. It was the packer of that day. They call them seed bag packers in this literature. And then, as Carll says, some of them used a mechanical packer, which was this structure here. So at the time of this publication back in 1880 Carll shows that it was well known that packers would be placed on the tubing to exclude one length of the well from another, and that is why particularly that I have picked the Carll publication.

Q. You referred to testing with respect to the Carll publication. Does this drawing and enlargement enable you to explain that a little more in detail?

A. Yes. Referring particularly now to the bottom of page 196, Carll describes a well which was drilled at that time and said that they had about 200 feet of drive pipe that had to be driven in the island well. It happened to be on an island there. And that then they tested for two weeks, which, according to other things that Carll has said in the publication, would indicate that they placed a tube down here with a packer on it and shut off and attempted to get fluid through there either by its own rise or by pumping, and they tried for two weeks to get a satisfactory fluid. At the end of the two weeks, failing to produce oil, they went down 500 feet deeper and again tested with a [fol. 321] like result. On the next test, which was continued three weeks, it showed no oil or gas but pumped about 75 barrels of very salt water. 1,500 feet at that time, in 1866, was a very unusual depth for a well. They tested a well 1,500 feet deep at that time and made three tests and finally found it was a salt water well instead of an oil well from the fluid that they received from the bottom of the well.

Q. They were attempting to drill an oil well, were they?

A. They were attempting to drill an oil well and made three tests.

By Mr. L. S. Lyon:

Q. Did you say, Mr. Abbett, this Carll publication actually states that they used these packers in making those tests that you have just referred to?

A. It states this, that—

Q. Can you just answer that question yes or no?

A. Yes. Now, may I explain?

Mr. Boyken: Yes; certainly.

A. These tests were undoubtedly made by pumping.

By Mr. L. S. Lyon:

Q. Does it say so?

A. If they continued for two weeks and three weeks in making the tests, from the other matter that is in this Carll publication here it states that they pumped and pumped on various wells in an attempt to get the material, and they were undoubtedly made by pumping and, if that was the case, they used pump pipe, as shown in any one of those three Figures, with a packer on it and made their tests.

Q. I was just trying to find out whether in checking these publications you are saying that they actually describe [fol. 322] how those tests were made as distinguished from your telling us how you think they were made.

A. They actually describe how pumping was done and from the entire context of the material here it is my understanding that these tests were made by that pumping equipment.

By Mr. Boyken:

Q. That is what you gather out of reading over these reports?

A. Reading Carll's reports; yes. The other reports, however, definitely tell of tests.

Q. Now, proceed with the next report, which is the report to Peckham, Exhibit I-2.

A. The Peckham report was gotten out by the Department of the Interior and the Census Office of the United States, and it is the history of the production of petroleum and traces the development of oil well drilling in the United States. It is to a great extent in its history a repetition of Carll. There is, however, one example of procedure, which appears on page 6, to which I would like to call attention. That was work that was done in 1808. At that time oil wells were practically unknown. They were drilling for salt wells. And they drilled a well in which there was salt

water and contaminated material, and, not knowing that, but proceeding further, they did strike oil sand, and their attempt was to withdraw the salt water from the well and evaporate the water to obtain salt. That was in 1808. And at the bottom of that page it states the proceeding that they followed then, which is very pertinent to the present subject. If I might read the last paragraph:

"Now was presented another difficulty." That was after they had diluted the well. "How to get the stronger brine [fol. 323] from the bottom of the well, undiluted by the weaker brines and fresh water from above. There was no precedent here; they had to invent, contrive and construct anew. A metal tube would naturally suggest itself to them; but there were neither metal tubes, nor sheet metal, nor metal workers, save a home-made blacksmith, in all this region, and to bore a wooden tube 40 feet long, and small enough in external diameter to go in the 2½-inch hole, was impracticable. What they did do was to whittle out of two long strips of wood two long half-tubes of the proper size; and, fitting the edges carefully, together, wrap the whole from end to end with small twine. This, with a bag of wrapping near the lower end, to fit as nearly as practicable water-tight, in the 2½-inch hole, was cautiously pressed down to its place, and found to answer the purpose perfectly, the brine flowed up freely through the tube into the gum," which was a relatively large place at the top of the bore, "which was now provided with a water-tight floor or bottom to hold it, and from which it was raised by the simple swape or bucket."

This was a single tube which these men, without anything in advance to teach them, had made from whittling two 40-foot timbers, and they had laid them together so that they had a hole in the middle of them, and wrapped that with twine, wrapped a large ball of twine at the bottom, to make a packer, and carefully set it down in the hole to exclude the diluted brine that was in the well from the concentrated brine at the bottom of the hole, and which they wished to extract.

The Court: What did that rest upon?

A. The structure rested—the swab or string fit against the formation, and, as they carefully put that down to the [fol. 324] level they wished to reach, that wrapping of string making a swab or a packer excluded the diluted brine at the top of the well from the concentrated brine at the bot-

tom, and allowed that to flow up through the tube and the packer to the top of the well.

The Court: They had to know where they wanted the twine placed, did they not, before they started it down?

A. Yes.

The Court: They knew that at a certain place they wanted to make a seal?

A. That is right.

The Court: And wrapped the twine around at that place?

A. Yes.

By Mr. Boyken:

Q. Now, Mr. Abbett, will you proceed with the last of these three publications, which is Chamberlin, Exhibit I-3?

A. The last of the publications is the Fifth Annual Report of the United States Geological Survey to the Secretary of the Interior, in 1883 and 1884, and was printed by the Government Printing Office in 1885.

Q. What is the materiality of that publication to the issues in this case?

A. That publication was substantially concurrent with the issuance of the Franklin patent, which was 1882, and described drilling methods at that time. The Chamberlin report is discussing artesian well drilling, and he shows on page 157 the old seed bag packer, and on page 158 he shows a mechanical packer, which is of a type adapted to engage the wall of the bore in which they are drilling, so that the upper tube could be rotated with relation to the other, screwing the two members together, and compressing [fol. 325] a series of rubber discs, so that they would expand and make a seal.

Q. Will you show the Court the illustration of the hook wall packer as it appears on page 158 of that publication?

A. At the left hand the different parts of the packer are disassembled and laid out here, so that here is the upper part and its shoulder, and here is the threaded member which screws into the lower end of the upper part, and upon which threaded member this series of rubber discs are placed one after another, as shown in the right-hand view. The shoulder at the lower end of the threaded extension permits the downward movement of those discs. On an extension beneath the packer structure are a pair of spring members, which extend outwardly and engage the wall of the well bore, so that they would be substantially held

against rotation and the tube extending to the top of the well may be rotated, to screw this member down and compress those packing rings into the well bore to make a seal, so that the area below that packing structure down here in the well would be sealed off from the area above the packing structure.

The Court: Did you say that was the Geological Survey report?

A. Yes. And that was a mechanical packer, as shown then.

By Mr. Boyken:

Q. Now will you please resume your seat. Is there anything said in that report with regard to tests?

A. Yes. That report says considerable about tests, and has a paragraph on page 159 which discusses the detection of the flow. That is the title of the paragraph. In that [fol. 326] paragraph it says: "It is a matter of some practical moment, therefore, to know when a stream is struck which may yield a flow at the surface when put under proper control." And then he proceeds to describe three tests or methods of testing to determine the condition of the well and what is done, and we have enlarged the cuts from this publication, showing Figures 28, 29 and 30. The first figure states that it is a section of a well illustrating a negative test. Now then, what he says he does is to introduce a tube into the well bore carrying a packer, and he attempted to make a test at the point above the strata "A", and sealed off the formation above. He says that is a negative test, because he had a formation "A" and one "B", and when he sealed off here the fluid from the section "B" went into the formation "A", and he didn't get any flow at the top of the well at all, so the test was negative.

In Figure 29 it shows a section of a well, showing a partial and misleading test. In this particular case he set his packer,—he can set it by selection, moving it up to any point he pleases. In Figure 28 he set his packer above the strata "A." In Figure 29 he set it between "A" and "B", and, this done, he had a test of "B", but he knew nothing of "A". And the fluid from the formation flowed upwardly through here and out here, and he got his test sample. Figure 30 is a section of a well illustrating an inverted test. In that particular instance he shut off between "A" and "B",

and the well filled, due to the particular formation in which they were testing. In the conclusion of the article Mr Chamberlin says, on page 162: "These examples, while not exhaustive of possible cases, illustrate the nature of defective tests and the deceptive conclusions liable to be drawn from them. The remedy is manifest. Test each water-bearing stratum as it is encountered, or else vary the final tests so as effectually to exclude all liabilities of error."

Q. Now will you take up the patents, Mr. Abbott, and describe each one briefly? Those patents are in evidence now as Defendants' Exhibits H-1 to H-16. Take up the first patent, which is Defendants' Exhibit H-1, the patent to J. C. Lyon or Lyons, No. 46,124, the first one in order in the group of patents. Now, briefly describe that. Take Figure 1 of the drawing.

A. As indicated on the drawing, Figure 1, the title of the invention is, "Testing Oil Wells." The patent was issued January 31, 1865. At the time this application was filed in the Patent Office it was sometimes necessary to file models in the Patent Office, and the application in this case describes a model by which he discloses his invention, and he says that this member B is a block representing the earth in which the hole is to be made, and that A is glass, a glass tube, which would represent the well bore, and that he wants to make a test to determine what fluid is in the well at any point and explore that well, and illustrates a packer H and a packer G, which were flexible packers, they were bags that would be filled with fluid so that they would expand when the fluid was poured into them from the top of the well, and they would create a selected test, shown between those two packers, this one and that one. He would then either allow the formation pressure to flow upwardly through here, so that he got his sample or an indication of the well which he was testing, and if that pressure was not sufficient he augmented it by introducing air down through a pipe here into that zone, which would increase the pressure in [fol. 328] the zone, and then elevate any fluid that was in the tested zone, so that they could ascertain what it was. Mr. Lyon says, in talking of the packers which were used in place of the old seed bag, on page 2, beginning with line 3: "They can at any time be changed in their position in the shaft of the well, or taken out of one well and used in another, without any damage to the apparatus, which is not the case with the seed-bags."

So he had a testing device which he had intentionally made portable, to take from one well to another well to make tests, and he had it made so that he could control the packers and change their position in the well and test at any level he desired, excluding all of the rest of the length of the bore from the tested area, either above or below.

Q. You say there is a testing zone which appears between the two packers?

A. Yes.

Q. And you also mentioned two pipes. Are those two pipes one within the other, in order to relieve the fluid from the testing zone?

A. Yes. These two pipes, this pipe E is extending through the pipe B, and spaced from it, so that normally the fluid in the formation would move up in the intermediate space, and then, if there was not sufficient pressure in the formation, he allowed air to come in here and increase that pressure in the zone from there to there, so that the material would be elevated by the added pressure.

Q. There is another pipe which seems to be marked "F" on that drawing. What is that one for?

A. That pipe is the pipe through which fluid is delivered to the packer H and the packer G, to inflate them.

[fol: 329] Q. What is the patent entitled?

A. "Testing Oil Wells."

Q. Is there anything further you care to say with respect to the disclosures of that patent?

A. Other than he states that, "The object of my invention is to find where water, oil, and gas veins or fissures are, and to effect a cut-off above and below at any desired point or place in the walls of oil wells."

Q. That will be sufficient, Mr. Abbett. Will you please resume your seat. Now, take up the next patent, the Latham patent, No. 56,234, dated July 10, 1866, and briefly explain the disclosure of that patent, with particular reference to Figure 1.

A. The Latham patent has been selected because it shows substantially the packer illustrated in the Carll literature, of which we had the model a few moments ago. It is only shown to illustrate that back in 1866 they were issuing patents on mechanical packers, which, in this particular structure, shows, by reference to Figure 1, an upper tube A extending downwardly, with miscellaneous fittings on it, to a conical member D, shown in section, which will penetrate

within the bore of the packing member E, and as it is lowered down will expand that packing member E to effect a seal. When that conical member D is lifted the packer can contract and be moved to other parts of the well or entirely withdraw from it.

Q. Is there any reference to oil wells in that patent?

A. Yes. The title of the patent, as given on the title page, is, "Improvement in Oil Well Tubes."

[fol. 330] Q. Now please pass on to the next patent, to Kewley, No. 58,837.

A. The Kewley patent is called by a term that we found in the literature here, "Stop-waters for oil well tubing," which was a very proper description, as the packer was at that time intended to stop off the water so that operations could be conducted beneath. This packer is operated by two members, which screw one within the other. The upper one is connected with the tubing of the well, so that it could be screwed and rotated, and the lower one is held against rotation, as particularly shown in Figure 1, by these wings beneath the packing element, which would stick out into the wall and prevent the lower section from rotating. As the upper tube section was screwed down the packing element E would be compressed and expanded. It is interesting to note that in this connection Mr. Kewley, in 1866, wanted to make rotation of his pipe as easy as possible, and he introduced between the two shoulders J and I, where the pressure would be exerted, a bearing structure, an anti-friction bearing structure, which has a cage or a set of rings carrying a series of rollers, which are positioned between those two pressure faces and relieve the friction, the same as Mr. Halliburton has done in his stop cock and gear device.

Q. Will you be good enough, Mr. Abbett, to point out to the Court the anti-friction bearing which is immediately above the packer?

A. It is designated generally by the letter "J".

Q. What figure do you refer to?

A. Figure 1.

[fol. 331] Q. Figure 1, and it is designated as "J," and that is above the packer E?

A. It is.

Q. And those little wheels, what are they, as they appear in Figure 1?

A. Those little wheels are more clearly shown in Figure 4 where there are seen to be a series of wheels mounted on spindles, so that they can rotate freely, and their diameter is such, as shown in Fig. 1, as to separate the collars G and I, so that there would be no bearing action of the retaining ring J on them.

Q. Is there a tube or pipe utilized in connection with this structure?

A. Yes; a tube or pipe is connected above the device, and it is attached by a threaded connection to the member B. It may also be that a tube or pipe is connected below the device to the threaded connection D.

Q. I am referring to the tube that is above, which is connected, as shown in Figure 1, at the point marked A, which is the top of that figure, I believe. Now, is that pipe rotated in order to operate this device?

A. Yes; it is rotated from the top of the well. That is the way you would set the packer and release it.

Q. The rotation is at the top of the well, and that is for the purpose, as I understand it, of setting and releasing the packer?

A. Yes.

Q. What is the packer for—to seal off the two portions of the well?

A. Yes; the packer is in order to seal off any selected area of the well from a lower selected area.

[fol. 332] Q. Does that tube or pipe pass downward through the packer?

A. Yes; there is a communication directly through the packer.

Q. So that the formation from the area below the packer may flow upwardly through the pipe, to the top of the well?

A. Yes.

Q. Now will you pass on to the next patent, which is to Burr and Wakelee, No. 68,350, and briefly explain the structure and operation of that device as shown in the only figure in that patent drawing?

A. The Burr and Wakelee patent is entitled "Improvement in Apparatus for Testing Deep Wells." It was issued in September, 1867. On page 1 it gives the object of the invention, when, in the second paragraph, it is stated: "The nature of our invention consists in providing an apparatus that will, in the first place, explore and test the properties

of the well at all points from top to bottom, and enable us to ascertain the exact locality of each and every siphon or mineral vein in said well. Secondly, when the exact locality of the desired vein or siphon is found, by the mechanical operation of this invention, hereafter described, we are enabled to shut off everything foreign to the object sought for, both above and below, thereby enabling us to apply the whole force of our suction directly upon the object, whether oil or mineral-water."

Q. Now, Mr. Abbett, I don't want you to read any more. The Court can read that. But I want you to explain the thing with reference to the drawing. I understand your explanation is based primarily on that paragraph, which [fol. 333] is the second paragraph of the patent. Now, going to the drawing, show us how that operates.

A. In the drawing there is a tube A which extends from the top of the well downwardly, and, mounted on that tube A, in the drawing are shown two packing elements B. In the description, in the specification, it says that it is necessary, when making a test through the bottom of that tube A, that it is only necessary to use one packing element, but in the drawing it shows the use of two packing elements, so that the area between the two elements may be sealed off from the entire remaining length of the well. This sealing off is done mechanically by operation of the lever shown at the top of the tube in that view, and which, when pulled, will cause pressure to be applied on the intermediate lever shown mounted directly between the two packers, so that the packers will be simultaneously acted upon by pressure to expand and hold a positive seal against the formation. There is a small opening shown at K. It is rather difficult to see.

Q. Will you point out that opening at K? It is very difficult to see that. Will you point it out?

A. It is in the tube A just above the lower packing structure B.

Mr. Boyken: Does your Honor see the opening K?

The Court: Yes, I see K.

The Witness: And fluid from that selected zone is drawn into that opening.

The Court: Where is the opening?

Mr. Boyken: Designated as K.

The Witness: There is a hole right where my finger is.

The Court: Is it marked?

[fol. 334] Mr. Boyken: Yes. If you will permit the witness to put his pencil on the small hole.

The Witness: It is very difficult to see the letter, because the letter is right in the hole.

The Court: All right. You cannot see it if it is in the hole.

The Witness: There is the K. (Indicating.)

The Court: That indicates the opening?

The Witness: Yes.

The Court: All right.

The Witness: That is the opening. So that there is a communication through the tube to that area being tested.

The Court: Through the—

The Witness: Through the wall of the tube. That opening is in that pipe A which is extending clear to the top of the ground.

The Court: And you mean that that allows any substance to come from the outside of the pipe into the pipe through that opening?

The Witness: That is right.

The Court: I see.

The Witness: And the test is thus obtained. The patent says that the lower end of that tube below the packer B, which is shown as threaded there, is closed while they are making a test through the opening K. But if they want to they can close the opening K and make a test through the lower end of the tube, below the lower packer B. In one place the patent is called an oil pump, and in the other place it is a testing apparatus for deep wells. It apparently tests by pump action to suck up the specimen being [fol. 335] tested, if there is not sufficient pressure in the formation to carry it to the surface.

Q. Now, Mr. Abbett, let us go over that briefly. You say this is a testing apparatus for deep wells?

Mr. L. S. Lyon: Did he say "deep"?

Mr. Boyken: Yes; the word "deep" is in the title. The title is "Improvement in Apparatus for Testing Deep Wells."

The Witness: That is what the title is.

Mr. L. S. Lyon: Does he say that is deep in the modern sense?

Mr. Boyken: Well, I don't know.

Q. How deep would it be as of 1867?

A. According to these Government reports and records here, wells were running from 1500 to 2000 feet at that time. That was a deep well, I would say from those reports.

Q. This patent discloses the use of either two packers or one packer; is that correct?

A. Yes.

Q. In the case of the use of two packers is there a restricted testing zone between the two packers?

A. There is.

Q. And that is shown in the drawing which is a part of this patent?

A. Yes.

Q. The fluid that is in that restricted zone, is that capable of entering the pipe and passing upward to the top of the well hole?

A. Yes. It is intended that it shall be taken upwardly through the pipe to the top of the well bore.

[fol. 336] Q. Suppose you use the alternative form disclosed in the patent, namely, the use of a single packer, in that case how does the fluid reach the top of the well?

A. The fluid would enter the lower opened end of the pipe A.

Q. And the single packer, in such a case, would be the lower packer. B shown in that drawing?

A. Yes.

Q. And then the fluid would pass through the pipe, which pipe in turn passes through the packer and up to the top of the well?

A. Yes, sir.

Q. By the way, was that patent and the previous patents referred to by you so far cited against the Simmons application during the time it was prosecuted in the Patent Office?

A. They were not.

Q. Please pass on to the next patent to John F. Carll, No. 73,577. Is that the same Mr. Carll who made these reports?

A. Yes; he is the same Mr. Carll who made the reports for the State of Pennsylvania, as mentioned in the publications. His patent was dated 1868. And in the light of those publications it shows that Carll used a structure of this type which was a sand pump for making tests.

Q. Just a moment. What do you mean by a sand pump?

A. A sand pump, as distinguished from a tester or a bailer within which material might be obtained, like in buckets, is a container which is lowered, without any packer on it, down through the fluid within a well, and has a valve of some sort in it which can be opened at a predetermined [fol. 337] time, mostly when the sand pump strikes the bottom of the well, and that weight would open the valve, thus establishing communication with an empty chamber within the pump. In an oil well or any other well the column of fluid in that well exerts a definite pressure. Just roughly speaking, you can figure that there is a half a pound of pressure exerted for every foot in length of pipe. So that, if a well was 2,000 feet deep, at the bottom of that well there would be 1,000 pounds of pressure. And the handling of it, incidentally, is one of the problems with which we are concerned. When that valve in the sand pump opens at the bottom of the well the pressure of that fluid on the outside will instantly rush in to the empty chamber, carrying with it all the debris, the cuttings and parts of the drill due to its force and lifting action, and the valve closes and they pull the sand pump out with that material entrapped in it. That is the usual operation of the sand pump. This particular sand pump of 1868 had a valve in it and a rod H extending downwardly and encountered the bottom of the well bore so that it tripped by a mechanism I will not describe and released this valve element D at the upper end of this piston rod within the cylinder, and when that was released the fluid adjacent to it, due to the pressure of that weight of water in the well, would be forced into it and the valve at the lower end of the pump, which is here shown as an inclined member leaning against the rod H, merely a flapper, would close and entrap the sample.

Q. Just a moment, Mr. Abbett. Let's go over this a little more slowly and in more simple language. This is a sand pump for oil wells, is that correct?

A. Yes.

[fol. 338] Q. Why did they want to obtain specimens of the sand in oil wells?

A. They wanted to ascertain from such materials as they found at the bottom of the well in what strata or through what materials they were penetrating.

Q. Was there also fluid there in addition to the sand?

A. There had to be in order to cause the sand pump to operate.

Q. So that this device was set down through fluid with the idea of entrapping the sand and fluid at the point to be tested?

A. Yes.

Q. It embodies a chamber for entrapping a sample?

A. It does.

Q. And that sample chamber is the whole device, the outside of the device, shown in Figure 1?

A. Yes.

Q. How many valves are there in that chamber?

A. In the chamber or the entire structure?

Q. In the entire structure.

A. There happen to be three valves in it.

Q. What does the bottom valve do? What is the purpose of that?

A. The bottom valve adjacent the mouth of the device is a flapper valve just like a leaf that would lie down over a hole to close it.

Q. Does that entrap the sample?

A. It does.

Q. That is to say, Mr. Abbett, after the sample is in the chamber that lowermost valve closes?

A. Automatically; yes.

[fol. 339] Q. Automatically?

A. Yes.

Q. And then when you have the sample in that chamber with the lower valve closed what is done with respect to the chamber?

A. It is raised from the well and emptied and then its contents observed, according to Mr. Carll's publication.

Q. While that sample chamber is at the bottom of the well what action is it that makes the sand and fluid there go inside of the chamber?

A. The weight of the column of liquid within the well.

Q. That fluid and sand rush into that chamber while the test is being made?

A. Well, the valve D, of course, has to be tripped before it will go in.

Q. And what causes that to trip?

A. When the tube H encounters the bottom of the well and the structure is further lowered.

Q. Will you tell us for what particular purpose you selected this patent?

A. I selected this patent originally because it showed a test, or it showed a chamber within which fluid from a well would be contained, and it described that that sand pump or chamber structure was carried on an augur bit, which was a rigid member, and that when the structure was lowered into the well the valve would be released so that it would open by the downward movement of the sand chamber while the member H was being held stationary as it encountered the bottom of the well, and the downward movement of that structure released and permitted the valve in the sand chamber to open.

[fol. 340]

By the Court:

Q. What is the purpose of the upper valve?

A. The upper valve was as a relief valve. The space above the member D, which is a movable member that would move up, is filled with air, and, if an excessive pressure is in that chamber when the member D moves up, they have provided a valve, normally held inwardly by a spring, which would allow that air to pass out in the well bore and allow the sample to come in. There would be no resistance of the air otherwise compressed in that upper part on the upward movement of the valve member D.

By Mr. Boyken:

Q. Please take up the patent, very briefly, to Birge, No. 182,098.

A. The Birge patent is merely a valve structure for a sand pump. This structure, as shown in the Figures of the drawing, is screwed onto the lower end of the tube, which is the sand chamber corresponding to the chamber in Carll, within which they are going to entrap the material. And in this structure we have a stop cock type of valve, that is, as shown in Figure 3 of that drawing, we have a rotary-valve element which establishes communication from beneath it to that tube above it when the part—

The Court: You had better begin again. I have lost the thread of your statement.

A. All right.

The Court: Perhaps you can indicate it on my copy.

A. In the Birge patent this is a valve structure for sand pumps. This is the lower end of the sand pump.

[fol. 341] By Mr. Boyken:

Q. You are referring to Figure 1?

A. Yes, sir. There is a tube to which it is attached and within which the material is trapped that extends up here, but it is not shown here, as he didn't think it was necessary because those tubes were being used, as Carll says, as high as 20 feet long. And what he wanted to do when he got to the bottom of the well, the same as Carll, was to permit the fluid to get into that tube above. So he provides a valve of the stop cock type, which is a cylinder that is rotatable. It is round and it rotates in this member, which is a sleeve B, and stands transversely of it. There is a passageway in that sleeve down to the point at which this cylindrical valve member is seated and a passageway beneath the sleeve, and when that valve element C is in the position shown in Figure 3 there is a full flow of material right up into the pipe. When that valve member would be in a crosswise position that opening would be interrupted. The way that the structure operates is that this lower member here is slideable, that is, moves up on that member, and the end of this valve is fitted with a gear which engages those gear teeth, and as you move those toward and away from each other it will be seen, as those teeth move up, this valve will rotate in one direction and when you move back that valve will rotate in the opposite direction, either to an open position like this or a closed position at right angles to it. There is a spring in the bottom of the member A which normally holds the members A and B in their separated position. The patent explains that in that position, the valve is closed and that that is the way he intends to go in the hole. And when he gets down he lets the weight of that sand pump tube come [fol. 342] down and it would telescope within this member here, causing the valve C to rotate and to open, and that when he lifts the weight the spring will separate the member B from E, causing that valve to close again, and he withdraws the structure from the well. He states that the motion of the valve is positive; does not depend on the pressure or action of the sand and water to operate; that it is more effective in its operation and will remove a greater capacity of sand.

Q. Is there anything said about this device being intended for use in connection with oil wells?

The Court: It says it is an improved sand pump for oil wells.

Mr. Boyken: Yes; in the Pennsylvania field, I believe.

The Court: I think it is the shortest patent on record. Is it not?

Mr. Boyken: That is one of the good qualities about this patent, your Honor.

Q. Will you now take up the patent to Koch, No. 208,610?

A. The Koch patent is merely produced to show the practice of having an enlarged bore in the well at its upper end, a reduced bore E, and that it was common knowledge at that time, as shown in this patent, to have a packer that set on the shoulder, which would occur at the point of reduction of the bore.

Q. Does that show a "rat-hole," as we have been terming it in this litigation?

A. Yes; that would show a "rat-hole," the reduced bore below a larger bore above.

[fol. 343] Q. And that "rat-hole" is packed off from the upper portions of the well, is it?

A. It is.

Q. Please take up the next patent to Dower, entitled "Oil Well Packer," No. 249,228.

A. The Dower patent shows a packer mounted upon the tube of a well and which is mechanically set by lowering the upper tube section against a cone, the same as we previously described, to expand that packer against the wall of the well.

Q. What figure shows that?

A. That is shown in its non-expanded position in Figure 1. And in Figure 2 it shows the cone lowered into the packing element I, I believe it is, to expand and set against the wall of the formation.

Q. That is an oil well packer, is it?

A. It is an oil well packer. And Dower explains that he wants to use this in order to shut off different sections of the well and exclude the material thereabove and permit the material beneath to come up through that tubing. This Dower packer, along with others, shows that it was common knowledge at that time to mount a packer on the tubing of the well.

Q. Does it say anything with respect to flowing in connection with an oil well? I call your attention to paragraph 2 of the first page.

A. Yes. Paragraph 2 mentions the flowing of an oil well.

Q. How does that oil well flow in connection with the drawing of that patent?

A. It may flow by the pressure within the confined area below the packer or, as he has explained in Figure 3, he may [fol. 344] proceed and lower a pump structure into it and pump, putting the well on production.

Q. Is there anything said with respect to jarring in order to release and remove the packer? I call your attention now to page 2, two paragraphs just preceding the first claim. Please explain that.

A. He states there that "As a further advantage to be gained by my construction, the vertical play of the section C inside the section D——"

Q. Don't read it all. Just explain the significance of that.

A. Well, he mentions jarring. That would be that you could jar this loose.

Q. Let's take up the next patent, which is the Benjamin Franklin Patent. That is No. 263,330, entitled "Device for controlling and regulating the flow of oil wells," dated August 29, 1882. Did you have an enlargement made of the drawing of that patent?

A. I did. On the easel here is an enlargement of the Franklin patent, the entire drawing as appears therein.

Q. I wish you would refer to this enlargement of the drawing of the Franklin patent and describe the structure that is there shown.

A. The Franklin patent is a device for controlling and regulating the flow of oil wells. It includes a valve structure, at the upper end of which is a pipe A-1 which is connected with the tubing coming down into the well of any of the types of tubing that we have seen this morning. This tubing which connects with A-1 extends to the top of the well. The member A-1 extends downwardly and has an enlarged cylindrical portion on its lower end. At the bottom of the cylindrical portion is what we might term a partition [fol. 345] that extends across it and has an opening in it of semi-circular form, as particularly shown in Fig. 3 of the drawing, that view being a view showing the lower end of the member of which A-1 is a part and looking upward. The concentric hole, shown in Fig. 3 as being smaller than the

outer diameter, is the passageway upwardly through A-1, which is partly obstructed by this partition across here which has that opening in it. Below that partition is a disc and that disc is circular and is shown in Figure 5. It has a semi-circular opening in it substantially the same size as the semi-circular opening shown in the end partition C shown in Figure 3. The disc is mounted on a seat, which is here indicated as forming the upper flaring part of the tapered portion B. The patent says that the disc may be secured rigidly to the seat or that it may have slight vertical movement, as indicated here by the space appearing between that portion there and the seat and possibly by the reference numeral b-2 with the lead line. The specification says that the disc may be separate or fastened and formed integral with this part down here. But he shows it in the drawing as having this slight relative movement. Since it is fixed in there in that manner and can float slightly, he must prevent its rotation relative to the seat on which it sets, and he makes two holes in it, p, on each side, as shown in Figure 5. He has a pin that comes upwardly from the seat and sticks into those holes so that the disc may float up and down but cannot rotate. The seat of the member B has a threaded outside portion which has an upward cylindrical flange completely covering what would be the joint between the disc D and the disc C. Surrounding the threaded portion of the member B and threaded thereonto is this outer cylindrical [fol. 346] housing or cage B', which is fitted with an annular flange that runs entirely around the structure, as indicated at b' and is screwed down on the upper edge of the cylindrical threaded portion of the member B. It will be noted that the portion C is housed within the member D', and that it has a flange which extends outwardly, and under the flange on the member B', so that the members C and A' will be held against movement. It is also noted that the enlarged portion C is within the member B' and confined also by the end wall of the member B', so that it could not pull out there. The upper edge here of the end wall of the member B', in addition to having a cylindrical opening through it, also has on one side a cut away portion, as generally indicated in Figure 4, which is engaged by a key extending upwardly from the end face of C, as we will show you on the model, so that the tube A', with its associated parts, including the partition member c, rotates from the position where the key carried by the member which is supposed to be in the struc-

ture of Figure 4, but is here removed, so that the key will form a stop, and the member A' with the member C and the partition indicated by the reference numeral c, may rotate a half a turn one way or the other. When it rotates in one direction the opening in the member D will be matched with the opening in the member C, and at that time, as shown in Figure 2 of the drawing, a flow of fluid from the member A upwardly through B, through the matched opening, can take place into the member C, through the member A', and up the tube. When it is rotated a half turn to the other stop these members will move from their matched position, and the solid portion of the disc C and the solid portion of the disc D will be disposed so that they close the opening in the [fol. 347] opposite disc with which they are matched. So that the opening which would otherwise occur between the matched openings of the two discs would be closed, as shown in Figures 1 and 2. That is the structure of the device shown in the drawing.

Q. Just a minute, Mr. Abbett. May we call that a valve structure?

A. That is a valve structure, which is controllable by rotation of the pipe attached to the member A' extending to the top of the well, and as it rotates it will rotate to match the holes in the two valve elements, which are working on a common axis, to a position where flow will be established through them, or to a position where flow will be completely interrupted.

Q. Then, as I understand it, you rotate the pipe at the top of the well to open and close the valve; is that correct?

A. That is correct.

Q. And the valve is in a casing of some sort?

A. The valve elements exactly are the two disc members, the one being formed with the member C, and indicated by c, and the other by the member D, as shown in the drawing, and the remainder of the structure provides a protecting housing for those two valve elements and a seat for the lower valve element or an attachment for the lower valve disc.

Q. Is there anything said in the Franklin patent about a packer?

A. Yes. The Franklin patent describes this as a flow device or a device for controlling and regulating the flow of an oil well, and he says that this structure is carried by

the tubing, is preferably placed deep in the well, and is preferably mounted above the packer.

[fol. 348] Q. I am reading from page 1, line 16, of the patent, where it says, with reference to the device: "But preferably within, at a point above the packer." What is meant by that, Mr. Abbett? Where would the packer be located on the Franklin device?

Mr. L. S. Lyon: I object to that, your Honor. The witness should show where in the patent there is a disclosure as to where the packer is.

The Court: That is what you are asking him, isn't it?

Mr. Boyken: Yes. I just read that. It says that this is located preferably within at a point above the packer.

Mr. L. S. Lyon: There is no statement that this packer is on a string of tubing.

Mr. Boyken: We don't pretend that it is. Packers are old in the art, as your Honor knows.

The Court: He may answer.

Mr. L. S. Lyon: If your Honor please, I want the witness to point out where the patent states the packer is. It is our contention, so your Honor will understand the objection, and it is so held by the decisions, that the packer that is referred to here is not a packer that is on this string at all. It is a packer that is in the well, and packers were used as seed bags in place of cementing on the casing in the well.

The Court: There is no packer indicated on that?

A. There is no packer indicated on this drawing. The only statement relative to a packer in the specification is that this structure is placed above the packer, which means that the packer is below the valve.

[fol. 349] Mr. L. S. Lyon: I object to the statement of the witness as to what it means. My point is, and the courts have found, that there is no warrant for inferring from that statement in the patent, in view of the practice in the art at that time, that that is a packer on this pipe at all, either above or below.

The Court: Does it mean a packer on that structure itself?

A. I don't say that. I say the patent says that the valve is placed in the well above the packer. I am not saying at

the present moment where the packer was. All I am saying, is that in the other prior art that we have shown here that there was a packer on the tubing.

Mr. Boyken: I will reframe it.

Q. Calling your attention to the portion of the patent which I have just read, that is to say, page 1, commencing with line 14, where would the packer be located with respect to the valve structure shown in the Franklin drawing?

Mr. L. S. Lyon: That is the question we object to.

The Court: Do you mean where might it be located?

Mr. Boyken: It says "preferably at a point above the packer." Now, I want to know what is meant by that language.

Q. What does that mean to you as a person reading this patent?

Mr. L. S. Lyon: That is objected to as not a proper test. This witness knows what this invention is and so does the court. It is impossible to divorce that from your mind. The question is not what this witness can say that can mean [fol. 350] but where is there any statement in this Franklin patent that makes the disclosure.

Mr. Boyken: I just read it, Mr. Lyon.

The Court: It says it might be placed above it, doesn't it?

Mr. Boyken: Yes, your Honor.

Mr. L. S. Lyon: But it doesn't say that packer is on this pipe at all.

The Court: Answer the question.

A. Will you please read it, Mr. Reporter?

(Question read by the reporter.)

Mr. L. S. Lyon: The witness can't possibly answer that, if your Honor please.

The Court: Answer the question.

A. I will answer it by quoting from the patent itself, that the valve is above the packer deep in the well. That is what it states.

By Mr. Boyken:

Q. With the crayon that you have in your hand just indicate where the packer is located.

Mr. L. S. Lyon: We object to that. This is a pipe in a well which has other pipe in it, or may have other pipe in it, and there is nothing to warrant this witness placing this packer on this pipe at all.

The Court: I don't see the necessity for indicating it.

A. In all fairness, I will just say that, since there is the valve above that dotted line, the packer is below it, and that is what the patent says.

By the Court:

Q. That is what the patent says?

A. Yes; that is what the patent says. It doesn't say that it is on the tubing or off of the tubing. It says it is down there.

[fol. 351] By Mr. Boyken:

Q. Where is the whole valve structure located with respect to the well, according to the patent?

A. The patent says that the valve structure is preferably placed deep in the well.

Q. Does that mean it is in any kind of fluid?

Mr. L. S. Lyon: I object to that. The question is what does the patent say.

The Court: I don't see how he could say but, nevertheless, he may.

Mr. L. S. Lyon: It also says this thing may be at the top of the well.

The Court: Answer the question.

A. By "in any kind of fluid" do you mean the valve or the packer?

By Mr. Boyken:

Q. I am talking about the valve structure and the packer, both.

A. I wouldn't know from the patent whether it was in the fluid or not.

Q. What about the packer?

A. The packer must have been in the fluid because it was a packer there to pack off a section of the well.

Mr. L. S. Lyon: I object to that. There is no such statement in the patent.

The Court: The objection is sustained as to that.

By Mr. Boyken:

Q. What do you understand by the use of the word "packer" in this Franklin patent?

A. By the use of the word "packer" I understand any of the structures in the prior art, which we had this morning, which were devised to shut off one section of a well from the other.

[fol. 352] By the Court:

Q. Where do you find that in the patent, the reference to the packer?

A. There is no definition of a packer in the Franklin patent.

By the Court:

Q. I mean the language you just read.

Mr. Boyken: That is on page 1, your Honor, the first column, line 17, where the word "packer" appears.

Q. I am going to ask you to compare the structure shown in the Simmons patent in suit with the structure shown in the drawing of the Franklin patent, both enlargements being before you.

A. In the Franklin patent we have the member A-1 which connects the tubing extending to the top of the well.

Mr. L. S. Lyon: I object to that. The Franklin patent says that that thing may be at the top of the well.

Mr. Boyken: I object to these interruptions, if your Honor please. They are merely arguments of the case.

The Court: There seems to be overlapping objections here. Go on with the answer.

A. In order to try to clarify that matter, the Franklin patent states that this device could be used in two ways. One would be a valve that would be at the top of the well and the other would be a valve which would be deep in the well and which you would rotate by the tube. Taking the comparison of the valve deep in the well which would be rotated by the tubing, and so there will be no confusion, I will state that the portion marked A' is connected to that portion of the tubing which extends from the top of the well to it; that in the device of the Simmons patent, as

shown in his drawings, the member which he has designated as 19, the upper cylindrical member, is attached to the tubing which extends to the top of the well, and that in both instances the members attached to the tubing are rotated by rotation of the tubing. In the Franklin device the upper valve element, which is the partition member c, is formed with a semi-circular opening through, it through which fluid may flow. In the upper packing element 19 of Simmons it is formed with a passageway, or a pair of passageways, here indicated in this perspective view in Fig. 3 as 17, that come down through it and through which the fluid flows, the same as it does in the structure shown in Figure 4. Below the members C and A' of the Franklin patent, which are attached to the portion of the tubing above, is a valve element shown in the Franklin at D and which is complementary to the valve element c, and it has an opening through it which would match with the opening in the upper member with relation to which it rotates. In the Simmons device we have the element marked 4, which is the lower valve element, and that has passageways 5 through it, agreeing with the passageway through D, and when the upper element is rotated the passageways 5 and 17 will be moved into positions of alignment, as shown in Figure 1, or to positions of misalignment when the valve is closed. In the Franklin device there is an arcuate slot around the top of member B', within which a stop member carried by the member C moves, and that limits the amount of rotation of the upper member with relation to the lower member to rotate the structure from a full closed position to a full open position and back. In the Simmons device, as shown in Figure 1, there is a slot in the upper member which extends around the edge of it and which receives a pin carried on the lower member, and [fol. 354] that, likewise, limits the rotational movement of the upper member 19 with relation to the lower member 4, so that at the end of that movement, as limited by the pin 23, the ports 17 and 15 will be moved to positions of alignment or out of position when the valve is closed. The lower valve plate D of the Franklin device is fixed with relation to that portion of the structure indicated by B and the pipe there beneath, so that when the upper member with the tubular extension A' and the tube connected to it are rotated the upper member with its openings will be

able to move relative to the lower portion which is held stationary. In this particular device, the Simmons device, it will be seen that the member 4, which is the lower valve element carrying the passageways 5, has an extension which they call a mandrel and through which the passageways 5 continue. On that mandrel is mounted a packer which is pressed against the formation of the well, holding that lower member stationary, so that the upper member can rotate with relation to it when the pipe 23 is rotated.

By the Court:

Q. How is that held stationary?

A. By fitting in to the seat in the well bore, which I might indicate here, this being the "rat-hole" and coming up this way and that being the large bore of the well, and that packer fits in that seat to form the seal with which we are concerned between the fluid which is up here and such formation fluid as is down below there. And when that fits into that seat, and it must fit in there firmly, then this lower portion is held against rotation and the upper part may rotate if the parts are so adjusted that they will not stick. In the Franklin device this portion down here must be held by something in order that the upper valve [fol. 355] element may rotate with relation to the lower valve element and move these parts shown in Figure 3.

Mr. Richmond: Your Honor, I object to that unless he points out in the patent where it says that is true. I don't think he has any right to plead this patent and then put his own interpretation on it and read into it things that are not in the disclosure of the patent. And I move to strike out that last statement.

The Court: I think that objection is good. The patent itself does not state that, does it?

A. The patent does not state the obvious, which is that one part must be held with relation to the other in order to bring those parts to match or not to match.

By the Court:

Q. What about the Simmons patent in that respect?

A. I think that the Simmons patent—I don't know.

Mr. Boyken: It is obvious from the structure.

A. Even in Simmons it is, of course, understood and no one will deny that that packer is supposed to set in there firmly and against rotation. I think that is a fair statement of it.

Mr. Richmond: It shows it and discloses it but the Franklin patent does not.

Mr. Boyken: It does.

Mr. Richmond: I say that Simmons discloses that it is held there and describes it. It is in the patent.

Mr. Boyken: And it is very obvious from the Franklin patent also, your Honor.

Mr. Richmond: It is not.

Mr. Boyken: I say it is. But there is no use having an argument about it now.

[fol. 356] The Court: We will settle this right now. Mr. Richmond, find in the Simmons patent where that is shown, and then the witness will show in the other patent where it is shown there.

Mr. L. S. Lyon: I think that throws some light on those words "positively pressed" we were talking about the other day.

Mr. Boyken: That is in the claim of the patent.

The Court: That throws further light on the definition of the words, I suppose. It does not, as I recall it—now, I may be entirely mistaken—specifically mention that particular feature.

The Witness: In which patent, your Honor?

The Court: In the Simmons patent.

Mr. Boyken: I think it is quite obvious what the intention of the patentee was, and that was to set the—

The Court: I am speaking now of specific language, Mr. Boyken. If he has in mind any particular portion of the patent I would like to see it.

Mr. L. S. Lyon: I think if your Honor will look at page 3, line 67, it says: "This squeezing or forcing of the packer 15 into the "rat-hole" also anchors the body against rotary or turning movement."

The Court: Yes.

Mr. Boyken: There is no denial of that, your Honor, that that is so.

The Court: Is there any language of similar import in the—

The Witness: No. It states this, on page 2, beginning with line 5: "In Fig. 1 the parts are in such a position that

the opening in the disk D is closed by the half cover on the part C, and hence there is no opening through the device." [fol. 357] A half turn of the tubing from the top of the well will bring the parts into the position shown in Fig. 2, where the two half openings are upon each other, just leaving a free escape for the oil, so they turn relative to each other.

By Mr. Boyken:

Q. Now, let us go on, Mr. Abbett. Did you make a full size device in accordance with this disclosure of the Franklin patent?

A. I caused one to be made.

Q. Before we go on to that, will you describe the use to which the Franklin device is put, as that use is set forth in the Franklin patent?

A. The use of the Franklin device is generally indicated from its title, as a device for controlling and regulating the flow of oil wells. In explaining what that use was and what the conditions were under which that operated. Mr. Franklin explains in the first part of his patent that it was old to lower a pipe or tubing into a well with the lower end closed, that they used a brittle disc which they placed in that lower end, and that when they got to the place of operation, whatever that was, that the brittle disc was broken out. He also said that it was old at that time to provide a regulating valve that could be maintained closed after the pipe was down, so that the fluid pressure that might be within the formation could build up to a degree at which it would elevate itself, or the fluid from the pipe, when the valve would be opened again, and that he considered that he was the first man to provide a device that could be controlled from the top of the well, and which would be closed when he went down into the well, which he could open from the top of the well when he was down there, which he could close again at will, and that [fol. 358] he preferred, in using his invention, to go into the well with that valve closed, to open the valve, close the valve, and that when he came out of the well he preferred to have the valve closed when he came out. He then described the construction and the procedure by which that was done.

The Court: I was going to ask, was the Franklin patent considered as an interference in the contest over the Simmons patent?

Mr. Boyken: Yes.

• By Mr. Boyken:

Q. You say a full size device was made in accordance with the Franklin patent?

A. Yes.

Q. And was that full-sized device ever actually operated?

A. Yes. It was operated three times, one of which I saw.

Q. How was that full-size device made? Was it in accordance with the drawings of the Franklin patent, or did it depart from those?

A. The procedure that was followed I think would be the fair way to answer that, that we took a photostat of the drawing of the Franklin patent and had that drawing sealed as accurately as we could as to the essential working parts, and made a device in accordance with present machine shop practice to be run as a testing tool in a well.

The Court: Made of steel?

A. Yes, it was made of steel, made in the same kind of construction as any other tester would be or any other metal members and parts; and the proportions of the parts we attempted to take off faithfully from the drawing in the patent. We understand, of course, that the drawing in the [fol. 359] patent is only an illustration and is not made to dimensions, but we have attempted to follow those dimensions as indicated in the patent exactly as far as the essential parts go.

Q. Where the Franklin patent mentions a packer, what did you use for a packer?

A. We used a packer which was a straight wall type packer, just a rubber part. In some tests we used a "rat-hole" packer, but the one test that I saw was what we call a straight hole packer, which is a cylinder of rubber mounted on the portion of the drill string extending down into the hole, the lower end of that pipe, or anchor pipe, on which it is mounted abutting against the bottom of the hole, so that the weight of the drill string above the testing structure would compress that cylinder of rubber out against the side wall of the hole.

Q. Is that full-sized Franklin device here in the courtroom?

A. It is.

Q. Is that the device that is over here on the opposite side?

A. Yes.

Q. Would you mind stepping over here, Mr. Abbett, and identifying it?

A. A device like the Simmons device——

Q. Exhibit 9?

A. Exhibit 9—has been made, as far as essential elements are concerned, as near to the patent application drawing as we know how to make it, and a separation of the parts will indicate the accuracy with which we attempted to follow this.

Mr. L. S. Lyon: I would like the record to show, your Honor, that the only device the witness referred to in his last answer is the valve structure, that there is no packer [fol. 360] here or any of the rest of the assembly that the witness has referred to using, only the valve itself.

Mr. Boyken: I was just going to ask him about that.

Q. Where was the packer located with respect to the Franklin device?

Mr. L. S. Lyon: I object to that, the use of the term "Franklin" in connection with this. If he is referring to the test that the witness made, that is a different thing, but that question can be read with reference to the Franklin device.

The Court: Make it what he says is the Franklin device. That will be sufficiently identified.

A. We followed the patent to that extent, in that we located the packer below the valve on the structure here, and attached it to the threaded connection at the bottom of the conical portion, which we have already referred to in the Franklin patent, I believe, as the part B. The packer, with the anchor pipe, was screwed into here, and run on down into the hole to be tested, this valve structure being mounted on the pipe which carried the packer. The valve housing or outer cylindrical member, designated in the drawing as B', is here shown as threaded onto that cylindrical portion of the member B, and within that are the valve elements which we will disclose. At the upper end of the structure is the pipe A', which the patent says was connected to the tubing of the well. And this member here was a coupling into which we screwed the pipe which extended on up into the well, and by which the valve structure was rotated.

[fol. 361] Q. Can you open the device and show the court how the inside appears?

A. Yes. The member B has now been unscrewed from the member B'; and discloses the lower valve disc shown in—that will come out—shown in Figure 5 of the patent. That valve disc is formed with this opening through it and has those two pins so that the member may move up and down this way, in one form that Franklin describes. As I stated, he provides a little movement, because he knew about the sticking of valves, and he wanted to prevent any sticking of those rotary valves.

Mr. Richmond: I object to that. That isn't stated in the patent. Can he point out in the patent where Franklin says that? I ask that be stricken out.

Mr. Boyken: Just a moment.

Q. Mr. Abbett, will you show in the patent drawing where that stickiness of the valve is indicated, and also point it out in the patent?

Mr. L. S. Lyon: That isn't the objection, your Honor.

The Court: The objection would be good unless it is referred to in the patent. He may, however, refer to the patent.

By Mr. Boyken:

Q. Proceed, Mr. Abbett, and tell us what the patent says.

A. "Between the shoulder"—

Q. Where are you reading now?

A. I am reading from page 2, beginning with line 13, the paragraph there: "Between the shoulder b<sup>2</sup> and the flange b' there is enough room to leave a very little play vertically to the parts lying between. When the tubing is in the well the upper section is often held in suspension slightly, just [fol. 362] to keep it taut. This relieves the disc D of the weight of the tubing, and when the device is closed the pressure of gas keeps it seated on the part."

Q. All right. Now proceed with your description of the operation of what you say is a correct illustration of the device of the Franklin patent.

A. As the patent shows, this member here is the member A', and it extends downwardly and is enlarged at the bottom end and carries a flange, as shown here. On this member is a key. By placing it back in here—or, before doing that, I will call your Honor's attention to the fact that in

this enlarged portion here is the partition wall c, which extends across here, and that opening in it is arcuate and would agree with the opening in the member D, which is the movable valve element. Now, reversing the member B' and bringing this up to where it belongs, you will see that this member here travels in that slot and can, upon rotation, move the half turn necessary to bring the openings of the discs B and the partition member c into or out of register. When those openings are in register, as you can imagine from the way I place that down, there will be a complete passageway through that tube. When we rotate this around in any other position there, as limited by the key and that slot, they go over to a place where they would be out of register and the tool would be sealed off.

Q. Was this alleged Franklin device actually used in California, to your knowledge?

A. Yes, sir.

The Court: He is going to describe now its use, for purposes of this action?

Mr. Boyken: Yes, your Honor.

The Court: Go ahead.

[fol. 363] By Mr. Boyken:

Q. Will you please describe the test which you witnessed? First, state when it occurred and where.

A. I am frank to state that I can't give you those dates. They are in an affidavit filed here in connection with the motion for injunction.

Q. About how long ago? The exact date will not be necessary.

A. Approximately a month ago.

Q. Where was the test made?

A. The test was made in one of the Standard Oil wells northwest of Bakersfield.

Q. What device was used?

A. The device used was the entire Simmons tool as here shown.

Q. Do you mean Simmons?

A. I mean the Franklin tool, as here shown.

Mr. L. S. Lyon: Maybe he meant Simmons.

Mr. Morgan: They are the same thing.

Mr. Boyken: They are so much alike that we could forgive him for that.

A. The Simmons tool here shown, together—

Mr. Boyken: The Franklin tool.

A. —together with a packer of this particular type.

By Mr. Boyken:

Q. Please state what type that is, for the purpose of the record.

A. That is a side wall packer.

Mr. Richmond: Anchor packer.

A. Or an anchor packer, which means that there was an anchor pipe or a length of pipe that extended from this end down to the bottom of the hole, and had perforations in it like this, so that the fluid could come in through it, this [fol. 364] being an anchor pipe also. And when the weight of the drill string here and the packer with the tester on it was imposed on this, it compressed and allowed this to go out in the well bore and make a seal, and that simple type of packer was the one that was mounted on the tool and put into the well first, with a length of extra string down there, and when we made that test, we, after having assembled the device, hadn't remembered which way the valve should rotate to open and close. The parts had all been placed in there. So, on the drill floor, on the derrick floor, we poured some water in here and turned it from one way to the other, to see which way was the right way to bring the holes in alignment or misalignment, and, after finding it, the packer was mounted on and run into the hole.

The Court: This identical machine?

A. This identical structure was run into the hole above a packer of that identical type. And when it was placed at the bottom of the hole, or as it went down, we attached above it an element for the purpose of ascertaining exactly what happened in the hole, this being a test to determine whether or not this valve in the Franklin device would open and close as Franklin said in the specification, and

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whether it would retain the fluid which went through it and was up in the pipe.

Mr. L. S. Lyon: He doesn't say anything about that.

Mr. Morgan: We know that.

A. I said that was what we were trying to determine.

Mr. L. S. Lyon: I thought you said that was what he said.

[fol. 365] By Mr. Boyken:

Q. Let me ask you, Mr. Abbett, if you positioned the alleged Franklin device above the packer in your test?

A. We did.

Q. Proceed with the explanation of the test.

A. Above the packer and above the test tool, or, to be absolutely accurate, above the structure which we built in accordance with the Franklin device, whether it is a test tool or valve, we placed a structure that had been built which contained not a brittle disc but an aluminum disc capable of being perforated. This fits on a seat down there, with that bowl part down to resist fluid pressure. And then we have a pointed member here with holes in it that lead up and come out here, and that member is in that fashion and will be perforated. This center spike, this hollow spike, will be driven through it so that temporarily, or until you determine where you want it, all of the fluid from the drill string is excluded.

Q. What was the object of using that disc in the device that you have last described?

A. The object was so that after we got that structure here of the Franklin patent down in the hole we would know absolutely whether or not there was any fluid in the drill string above it and be certain that when we started our test that whatever happened during that test happened when we had the device in the bottom of the well.

Q. Did the metal disc have anything whatever to do with the operation of the alleged Franklin device?

A. No. It just excluded the fluid from the well.

Mr. L. S. Lyon: The fluid from what?

A. From the drill string.

[fol 366] By Mr. Boyken:

Q. Proceed with your explanation of what happened.

A. When we got down there, to be sure that there were

no leaks in the pipe going down, at the upper end of the drill string, which was up here—

Q. At the top of the well hole, do you mean?

A. Yes. —we put an oil rag, and that makes a temporary seal, which is used, I think, by all of them in testing. And, if there is any leak in there which would cause the air to be displaced, this would bulge up in the air in that way and the air would blow out from underneath it and you would know whether there were any leaks going down. After we had made that test and had seen that this rag is just like it is there, then we dropped a go-devil in here and broke out that disc. But before having done that we took pains to see if the stop was against the shoulder here, which meant that the valve in here was closed. After we broke this disc out then we made this test again to see if this valve in here was closed; and, since there was no disturbance at the top of the hole, we knew that there was nothing coming up through that valve into the drill pipe. Then we turned the structure in the direction which would bring those ports into alignment, and when it had been turned the rag on top of here blew up that way to show that there was some displacement of the air in here by the material coming through the valve. That only lasted a short time when we noticed that the fluid, which, by the way, filled the entire well bore in which all of these members had been inserted and was level with the top, and which they maintained at that level during the test so that there was a constant column of fluid clear to the packer, in the ditch and in the top of the hole [fol. 367] began to drop rapidly. What happened was that the fluid was at that time passing the packer and going down into the hole while we had the valve open, and thus there was not a perfect seat for the packer where it was coming around and was coming up in the drill stem. The pit in which the mud or drilling fluid is accumulated as it circulates into the well and out and back again was checked to show how much it had fallen, and the amount of that drilling fluid was computed so that we would know how much was required to replenish the supply in the well and so that we should be able to account for that lost fluid in the drill string.

Q. Mr. Abbett, let's not go into all of this detail. Let me ask you some questions about this. How far was the so-called Franklin device inserted in the well? How deep was it in?

A. It was down in the neighborhood of 2300 feet.

Q. And what was this fluid in the well that you have referred to?

A. It was drilling fluid which was rather heavy but not viscous mud circulated in the well.

Q. And did you open and close the valve of the so-called Franklin device during that test?

A. Yes. At that time I just mentioned we closed the valve.

Q. Did you open it first and then close it?

A. We had opened it, yes, before the fluid dropped.

Q. And then you closed it?

A. Yes.

Q. And how did you open and close the valve of the Franklin device? Just state that briefly.

A. By rotating the pipe at the upper end of the hole.

[fol. 268] Q. And then when you had made your test did you then close it?

A. Yes.

Q. And then after the valve was closed what did you do with the Franklin device?

A. The entire structure and all of the drill string was taken out of the well. It took in the neighborhood of an hour. And eventually we came to a place in the well where when we took off—

Q. Don't go into all of that detail. What did you get out of that?

A. We got about 260 feet of fluid within the drill string.

Q. How did that fluid come to be within the drill string?

A. By the opening and closing of the Franklin valve.

Q. And what was that fluid?

A. That was drilling fluid that had leaked around the packer and come up into the pipe.

Q. Did you consider as far as the opening and closing of the valve was concerned that it was successful or not?

A. Yes; I did because the valve closed, and when we came out we got that amount of fluid, and when we came to the last length of pipe, which stood about 90 feet in the derrick, we had the man on the top of the derrick tell us the condition of the pipe, and the pipe was full exactly to the top, and it stood there and we unfastened the tool here and allowed that last 90 feet to fall out.

Q. What was that difficulty that you encountered in making this test?

[fol. 369] By the Court:

Q. Do you mean the leaking?

A. Yes. The leaking around the packer while it was seated was the difficulty. It had nothing to do with the operation of the valve.

By Mr. Boyken:

Q. That is just what I was going to ask you. Did that in any way change or affect the operation of the valve?

A. No. The difference would only be that the fluid we got, since the drilling fluid was not packed off, was drilling fluid.

Mr. Boyken: That is all I have, your Honor, except I want to offer the full-sized Franklin device in evidence and I ask that it be marked the defendants' exhibit next in order.

The Court: It may be introduced in evidence:

The Clerk: Defendants' Exhibit K.

By Mr. Boyken:

Q. Just one more question with respect to this test. Was the packer that you used in connection with the Franklin device a packer that was known in the year 1882, at the time of the Franklin patent?

A. Yes. It was substantially the same type of packer as those which had been shown in patents and also the literature.

Q. By that you mean the literature that was referred to this morning?

A. Yes; the technical literature.

Q. And earlier than the date of the Simmons patent application?

A. Yes.

Q. I am going to read to you claim 9 of the Simmons patent, and I want you to look at the drawing of the Frank- [fol. 370] lin patent and point out wherein you find in that drawing the elements of the claim as I read it. "Apparatus for testing a well comprising a string of pipe to be lowered into a well having an inlet at its lower end."

A. The patent describes a string of pipe as being attached to the members A', of which A' is a continuation.

The inlet is through the member A' and the semi-circular opening in the partition member c.

Q. Again referring to the Franklin patent, I am going to read from claim 9 of the Simmons patent. "and carrying a packer adapted to be positively pressed against the walls of the formation." Do you find any showing of a packer in the Franklin patent?

A. The disclosure of the Franklin patent is that the valve structure is disposed at a point above the packer.

Q. "and a valve for the inlet positively controlled by movement of the pipe to open and close the inlet while the packer is seated." Do you find that in the Franklin patent?

A. Yes. That is the two disc-shaped members c and D.

Q. Please take up the McGregor patent, Mr. Abbett, No. 582,828, and briefly explain the drawing of that patent with reference to this suit.

A. The McGregor patent merely shows a single string of pipe run into a hole, and it has a breakable disc, indicated at a, on the bottom end of it. That is described as being made out of glass. And there is a valve ball that seats above there. It is for use in obtaining samples of subaqueous bottoms or soundings, as in the drilling indicated by C here, if they lost a diamond off of a bit. They break that member up and head down here causes that fluid to come down in by that ball.

[fol. 371] Q. How high does that fluid extend in the well?

A. In this well it shows it extending almost to the top. In normal drilling operations, however, it does extend to the top.

Q. Let's pass over to the next patent, the patent to Bloom, No. 785,933.

A. The Bloom patent has been merely selected to show the practice in 1905 of having the large bore at the upper end of the hole, a reduced bore beneath it, with a tapered face on it, and a tubular member, which is here described as a casing B, having a tapered packer fitting into that hole.

Q. Will you take up the next patent, which is the Cooper patent, No. 1,000,583?

A. The Cooper patent is entitled "A packer for operating gas, water and oil wells." It consists of a single string of pipe, here designated as 2, which runs down in the well through the various fluids that may be in it, and at its lower end it has a valve 25. This valve is fitted

with a sleeve so that an opening 24 in that sleeve may register with an opening in the pipe 2 or move out of register with it, to permit fluid to go in that opening or to be excluded therefrom. The valve is operated in this case by a string or cable which extends upwardly to the top of the well and may be opened and closed at will. The structure also includes a packer, which in this case was a packer adapted to be filled with liquid and expanded to seal off an area below it, into which the fluids in the lower area might be confined so that when the valve 25 is opened they would go into the string 2, and when the valve 25 was closed such material as was in there would be entrapped. The packer 25 is fitted with a pipe by which it is [fol. 372] filled with the liquid or from which the liquid in the packer may be drained.

Q. Is that a device to be used in connection with oil wells?

A. Yes; that is to be used in connection with oil wells. And for determining and testing the well, as he has stated over here, by this method of procedure a well can be tested for the presence of oil or gas by pumping, which could not be done if a flood of surface water were entering the well which the pump or bailer was incapable of removing. So it excludes the water which might be above the packer and allows the fluids which might be below the packer to be sampled or tested.

Q. Would you call that a formation packer that is shown in the drawing of that patent?

A. Yes. The packer presses exactly against the formation. In fact, the drawing, Fig. 1, shows a casing which extends partly down the well and then the packer is lowered on through the casing and is set against the formation.

Q. Was this Cooper patent cited by the Patent Office during the prosecution of the Simmons patent application?

A. It was and was the basis for the rejection of quite a few of the claims, which were cancelled in a number of instances without appeal.

Q. Will you please pass on now to the next patent, which is to Cox, No. 1,347,534?

A. The Cox patent was filed in 1920, and it was a device for testing wells for oil or gas. It issued in 1920. It has a packer at its lower end which is made of rubber and can rest on the shoulder which occurs at the point where the bore of the well is reduced. Above that packer is a connection by which it is fastened to a drill tube

or drill pipe extending to the top of the well, and in that pipe is a test tube which is described as being a metal hose, which extends down and communicates with the passageway through the packer. There is a mandrel on which the packer is fitted and through which the passageway extends, and it carries a perforated pointed tube which, when the packer is compressed and bows out against the wall of the well, will move down and strike a disc set across the mouth of the opening in the bottom of the packer, breaking it and allowing the fluid from the reduced bore to flow upwardly through the perforations and into the central tube of the structure, after which a small flapper valve, which would act like a leaf of paper coming down in the opening and indicated at 15 in Figure 2 of the drawing, would close so that as the device is lifted from the well the column of fluid resting upon that flapper valve would include an entrapped sample.

Q. Is there anything said in the patent with respect to wells drilled by the rotary method?

A. Yes.

Q. Where do you find that?

A. In the second paragraph it says "This invention relates to improvements in well-drilling, particularly to wells drilled by the rotary system."

Q. What fluid, therefore, is this device lowered down through?

A. It is lowered down through drilling fluid which is a fluid made up of water and mud at the well or through materials which would add weight to that fluid without increasing materially the viscosity of the fluid.

[fol. 374] Q. Is it a device for testing wells for oil?

A. It is.

Q. I am going to read to you claim 9 of the Simmons patent in suit and ask you if you find the elements as I read them in the drawing of the Cox patent. "Apparatus for testing a well." Is this apparatus for testing a well?

A. Yes.

Q. "comprising a string of pipe to be lowered into a well." How many strings of pipe are there?

A. There are two pipe elements. There is an outer drill string and a metallic hose that goes through it.

Q. Will you choose one of them as being a string of pipe to be lowered into a well?

A. In view of the fact we are concerned with entrapping a sample in a string of pipe, I will select the center metallic hose as being the pipe.

Q. Continuing, "having an inlet at its lower end." Is there an inlet at its lower end?

A. Yes; there is an inlet at the lower end of the pipe communicating with the passageway through the body of the packer-supporting element.

Q. Then it says, "and carrying a packer adapted to be positively pressed against the walls of the formation." Is there such a packer there?

Mr. L. S. Lyon: Do you mean is it carried by that string?

Mr. Boyken: Just let me finish and I will bring that out.

Q. Do you find a packer there?

A. I find a packer there adapted to be pressed against the wall of the formation.

[fol. 375] Q. You chose the inner pipe. Do you find the packer being carried by that inner tube?

A. It is carried by a body member 6 to which the inner tube is connected.

Q. Is that packer "adapted to be positively pressed against the walls of the formation to seal off the same from the inlet"?

A. Yes. That is the construction of the packer and the way it is described.

Q. Now, continuing, "and a valve for the inlet positively controlled by movement of the pipe."

A. The valve for the inlet includes the movable member 7 which is perforated, which goes down and breaks the disc at the bottom of the packer, which opens or establishes communication in one direction, and a flapper valve 15 which interrupts the flow in the opposite direction, one operated by downward movement of the pipe and the other by upward movement of the pipe.

Q. That substantially disposes of the end of this claim but I will read the language. "and a valve for the inlet positively controlled by movement of the pipe to open and close the inlet while the packer is seated."

A. Yes; that is correct.

Q. Do you find that in the disclosure of the Cox patent?

A. Yes.

Q. That so-called valve that is shown at the bottom of the Cox patent is virtually in two parts, is it not?

A. Yes; the moving element, which is common to both parts, is the mandrel 9 carrying the perforated end piece 7 and the disc at the bottom of the packer and the valve 15 within that.

[fol. 376] Q. In order to open that valve that brittle disc, or I believe it is a glass disc as it is described in the patent, is broken, is it not?

A. It is.

Q. And then the fluid from the formation to be tested goes upwardly through that interior tube?

A. Yes. The pointed member 7 will then penetrate down through the bottom of the packer and will be exposed to the pressure of such fluid as is in the "rat-hole" so that that fluid may go upwardly through the member 7 and into the metallic hose 13.

Q. And is that fluid that passes upwardly from a restricted zone?

A. Yes. It is from the zone that is below the shoulder on which the lower end of the packer rests.

Q. The packer forms that restricted zone, does it?

A. Yes.

Q. And does the whole device go in the well hole and down through the mud?

A. It does.

Q. And what is it that causes the fluid from the formation to pass upwardly through that inner tube?

A. The pressure that is present in the fluid which occurs within that area of the formation.

Q. Is that fluid then entrapped in this device?

A. It is when the valve 15 closes.

Q. That is a different valve from the valve that we said opened, is it not?

A. Yes.

Q. And when that entrapped fluid is in the device what is done with the device?

A. The device is withdrawn from the well with entrapped fluid within the metallic hose 13.

[fol. 377] Q. You have two valves there. Is that in any respect similar to the two valves of the Johnston device, the defendant's device here in suit?

A. Yes; in this particular, that the lower valve 15-A, which is the valve you can break out, must be broken out before any sample can be taken, and that corresponds to

the trip valve mechanism of the Johnston patent, which must be actuated before the sample or fluid will be permitted to flow into the structure. The valve 15 is as to function the main valve of the Johnston device or it is that valve which produces the entrapment of the sample.

Q. Is there any provision in this patent for reestablishing circulation?

A. Yes.

Q. What do we mean by reestablishing circulation?

A. In drilling a well, as previously stated, there is a passageway directly down through the drill string and out through the holes in the bottom of the bit through which mud is constantly forced, and this mud flows through the bit, comes up the outside wall, or between the wall of the bore and the bit and drill string, and tends to maintain a pressure, due to the weight of the column, which prevents cave-ins, which muds up the wall and carries out the cuttings and one thing and another and prevents the tools that might be in there from sticking. A circulation means maintaining a flow of that fluid down the well and up and back and around and down and when that is maintained the circulation is established. In this particular structure circulation may be maintained or established through the drill string 1 so that the fluid comes downwardly into the drill string and out through the holes 4 into the well bore and then returning up [fol. 378] into the bore. If it so happens that after this tool is partly withdrawn from the well and is off its seat and it becomes necessary to establish circulation, in that event, in order to hold down the pressure of the fluid in the well, the fluid will flow down around the packer and completely fill the hole, thus reestablishing the pressure of the entire head of fluid or column of fluid in the hole.

By the Court:

Q. You say it will go around the packer. How does it get around the packer?

A. I stated, your Honor, that, if the packer had been partially raised from the well and it was necessary to reestablish it, it would be in that position there, which would not be in its collapsed position. It would be partly up the well and contracted so that there would be a space down around the packer so that it would go right on down.

By Mr. Boyken:

Q. That is to say, if you take the packer away from the walls of the formation, there will be an annular space between the outside of the packer and the interior walls of the formation?

A. Yes; when the packer then is relieved of the pressure of the weight and of the drill string above it and can again contract circumferentially to clear the hole.

Q. Now, there are two patents to Halliday, Nos. 1,474,630 and 1,510,669, both being to the same man. I think we will skip over the first one in order to save time. Will you take up the second Halliday patent, which is very similar to the first one, and describe that structure?—I am now referring to patent No. 1,510,669.

A. The Halliday patent is more, as it states here, "a perforation cleaner for oil wells." As shown in Figure 1 of this patent, 1 is the casing which lines the well at the time [fol. 379] they are producing. When they are "producing" means that this casing here has holes in it, as indicated at 2, through which the oil may flow into the well and they can pump it. At times during the operation of production the silt and sand and other solids in the oil will accumulate in those perforations so that they have to be cleaned out, and the way they usually clean it is by forcing water back and forth through these perforations 2. The Halliday device, therefore, is a device here described as being inserted into a casing 1 to clean the perforations 2. In doing this he provides a string of pipe which runs to the top of the well and at the lower end of it he shows two packers. Those packers are mounted on a sleeve 34, and within that sleeve is another tube. The inner tube and the outer tube have holes through them, indicated in Figure 1 at 42, which is the hole below the lower packer 6, and 41, which are holes between the lower packer 6 and the upper packer 5, and 40, which are holes above the upper packer 5. Mr. Halliday, by a complicated—

Q. Don't go into that, Mr. Abbett.

A. I was going to say by this complicated arrangement he may bring either one of those sets of holes into relationship so that he can get a flow of fluid through them, and by one adjustment of the device he gets a flow of fluid through the set of holes 42 from inside the tube 31 and out through those holes below the packer through which the fluid may flow in or out into the sealed off area below the packer 6.

[fol. 380] Q. Is there anything said in this patent with respect to it being utilized as tubing or for a string in a flowing well?

A. He states, on page 5 at line 99, "The device may also be used as a packer at any desired depth in the well, the desired fluid being admitted to the tubing string through either the upper or lower ports as circumstances may demand."

Q. I also call your attention to page 1, the second column, commencing about line 89.

A. Yes. He states at that place, "My well cleaner may be allowed to remain connected with the lower end of the tubing string in a flowing well."

Q. Are you familiar with the file history of the Simmons patent here in suit?

A. Yes.

Q. Let me ask you with respect to these Halliday patents, they show packers, do they?

A. They do.

Q. And casings?

A. Yes.

Q. And oil well flowing apparatus?

A. Yes.

Q. The next patent is the one that was in litigation in Texas here some years ago. That is the Edwards patent. And I am going to ask you to take up the Edwards patent, which is entitled, "Testing Device for Oil Wells." The number is 1,514,585. I will ask you now to leave out all of the details and explain the structure and mode of operation [fol. 381] of this patent with particular reference to its similarity with the Simmons patent here in suit.

A. Do you want it from the enlargement or from the patent?

Q. Either one that the court desires.

The Court: Bring the large sheet up here.

A. The Edwards device is a testing device for oil wells, which was filed in 1921, and it includes a string of pipe 1, which may be drill pipe, coming down from the top of the well. And the pipe is fitted at its lower end with the member 4 to which a packer 5 is connected. This packer seats directly against the wall of the formation, as shown in Figure 2 of the drawing. There is a tapered opening through the packer 5, or I mean through the member 4, and in that

opening is a removable sleeve 7. It is just a tubular member which is tapered to correspond in taper to the opening through which it passes and within which it seats. That sleeve has packing at 9 which makes a tight fit around a tube 8. The tube 8 is the member through which the sample is obtained. In its normal position, before a sample is taken, the tube 8 is drawn up into the sleeve 7; and, since it is fitted with perforations which appear on the wall of the lower portion of the sleeve, communication between the interior of the tube 8 and the well at any point is prevented. At the lower end of the tube 8 is an enlarged head having a conical point and a tapered portion which threads, or is threaded, into the tube so that temporarily this tapered head is screwed into the lower end of the part marked 7 and holds that portion of the tube 8 so that there is no displacement between the two members at that time. When a sample is to be taken it may be taken by rotating the member 8 with relation to the sleeve 7, which sleeve is at that time frictionally [fol. 382] held in the seated member 4 so that it won't turn, and that will unscrew the head or lower pointed portion of the member 8 so that it is released, and the pipe 8 may be moved downwardly into the fluid passageway through this packer which goes all the way down and communicates with the bottom of the structure by which it is set in the hole. And then the fluid may come upwardly through those perforations in the pipe 8, up to such a level as the pressure beneath the packer would produce. The string or pipe 8 when elevated would withdraw the perforated portion of that pipe from beneath the sleeve 7, causing the perforations to be covered by the sleeve and closed or sealed by it. Then the further lifting of the member 8, which is the pipe within which the sample is placed, would cause the sleeve 7, which is now in the position shown in Figure 1, to be unseated from its tapered seat, thus allowing the pipe 8 with the sleeve covering the perforations at the bottom to be bodily taken out of the well and, if necessary, placed in again but drawing with it such fluid as was entrapped within the member 8 due to the closure of its lower end by the sleeve 7.

Q. Mr. Abbett, let me ask you is this a testing device particularly adapted for oil wells?

A. Yes.

Q. Does it embody a packer in order to effect a seal?

A. It does.

[fol. 383] Q. Does it have a passageway through the packer from the formation which is to be tested to the top of the well?

A. There is a passageway established, yes, when the member 8 is lowered so that the perforations are below the end of the sleeve.

Q. And is there a valve mechanism shown there?

A. Yes.

Q. And a drill pipe?

A. Yes; the drill pipe 1.

Q. I think we will pass on to the next patent and that is the last one, unless there is some other particular point that you desire to call attention to in the Edwards patent.

A. No.

Q. Let's pass on to the last patent, which is the Macready patent No. 1,522,197. Why did you select that patent?

A. For the sole purpose that it shows a "rat-hole" packer on a device for making production tests in well drilling, the application having been filed in 1922 and issuing in a patent on January 6, 1925. In this patent it will be noted that the member S is a tapered packer which, as shown in Figure 2, seats at the juncture of the reduced bore or "rat-hole" with the larger bore of the well and effects a seal so that fluid may pass upwardly through it from the "rat-hole."

Q. Will you take up the Simmons patent in suit? You have studied that patent, have you?

A. Yes.

[fol. 384] Q. And you have examined Exhibit No. 9, which is the device that was made in accordance with the drawings and disclosure of that patent?

A. I have.

Q. As a mechanical expert, Mr. Abbett, familiar with oil well practice, do you consider that the structure which is disclosed in the Simmons patent is a practical and operative device?

Mr. L. S. Lyon: I object to that, your Honor, on the ground that the witness is not competent to give any testimony that will help the court on that matter. He is not an operating man and not an operator in the oil fields. He is a patent solicitor. The testimony of this witness and his opinion that this is not a good device certainly cannot overcome the positive testimony that it was successfully used.

The Court: Of course, an expert may give such testimony.

Mr. L. S. Lyon: Yes. But this man is not an oil man. He is not a practical man in the field.

The Court: I say an expert, one who is called as an expert of a certain kind, may give such testimony. May he not?

Mr. L. S. Lyon: If it is material. But this witness has not qualified to give that kind of testimony. He is not an engineer and he is not a mechanic and he doesn't work in the fields and has not worked on an oil well.

Mr. Boyken: I understood Mr. Lyon admitted his qualifications this morning. And I further qualified him with respect to oil well practice.

Mr. L. S. Lyon: I didn't admit any qualifications about him. I reserved the qualification as to his having any practical knowledge of these things. I said he was a patent solicitor and used to reading patents. It would be like asking the court reporter for his opinion of the operativeness or effectiveness of this tool.

The Court: What did the witness say his occupation was?

Mr. L. S. Lyon: A patent solicitor.

Mr. Boyken: Specializing in oil well apparatus.

Mr. L. S. Lyon: He writes out applications for patents. He never worked with these tools at all. He never ran them himself.

Mr. Boyken. I am asking his opinion, your Honor, as a mechanical expert and it goes to the very heart of our case. Our contention is that the patent does not disclose an operative, practical device.

Mr. L. S. Lyon: He is not a practical expert and he is not a mechanical expert.

Mr. Boyken: If there is any question in your Honor's mind, I want to qualify him further.

The Court: Well, you had better qualify him further.

By Mr. Boyken:

Q. Mr. Abbett, please state your familiarity with mechanical matters. First state your education and training, and then your practical experience.

Mr. Boyken: I thought this was all admitted this morning, your Honor.

A. I graduated from Manual Training High School in Indianapolis in 1907. That high school gives the usual scholastic courses, and, in addition, we were required to take

shop work, including three years of mechanical drafting and designing, a year of free-hand drafting, and wood work, patent making, forging, foundry work, machine shop practice in the machine shop. After that I went for a time to Butler College, taking the usual scholastic work, and then went to work with the E. C. Atkins Company in Indianapolis, who are saw manufacturers, and who require the manufacture of various special machinery in the manufacture of saws and like steel products. I then did work in mechanical and electrical designing with the Waverly Electric Company, who were manufacturers of the Waverly electric automobile some years ago, and later came to California and did similar work with the Baker Iron Works, and engaged in general mechanical design of various types. The period of my work in mechanical designing covers approximately nine years. Then I did patent drafting, which was the making of patent drawings, and came into the office of the patent attorneys in which I have been for the last 20 years, studying and being familiar with the mechanical structures with which we were concerned in preparing and prosecuting patents.

Q. Please tell us your familiarity with oil well apparatus, particularly with the practical side of it as you have noted it out in the oil fields.

A. I have never worked in the oil fields. The only practical experience I have had in connection with oil work is in being required, over this period of twenty years, to visit oil fields and visit machine shops where oil field tools were being manufactured, in observing them and receiving the explanations of their engineers and inventors, and in attempting to reduce their inventive ideas to the form of patent applications, and the prosecution of such applications.

[fol. 387] Q. I am going to ask you the question again.

Mr. L. S. Lyon: I would like to ask the witness a question before your Honor rules, or a couple of questions.

The Court: Yes.

By Mr. L. S. Lyon:

Q. You have had no connection with the oil drilling industry except as a patent attorney; is that correct?

A. That is correct.

Q. You don't claim to be a mechanical engineer?

A. No, I don't. My familiarity with the oil industry, as I have frankly stated, has been in contact with their engineers and inventors over a period of 20 years, and familiarity with and the studying of problems in connection with patent applications.

Mr. L. S. Lyon: I renew my objection, your Honor. The witness has had no actual experience in the oil industry, and does not claim to be a mechanical engineer. Now, the woods are full of patent solicitors, and I certainly don't think that they are authorities on what is a useful tool in the oil business and what is an operative tool in the oil business.

Mr. Boyken: I would like to ask Mr. Abbett a further question.

By Mr. Boyken:

Q. How did you gain your mechanical knowledge, inasmuch as you apparently have no college degree?

A. Well, that is a long story.

Q. Tell us over what period of time you have actually gotten your hands dirty in mechanical matters.

A. During the period I was in school and during the period I worked in connection with drafting and designing problems, which was approximately 9 years.

[fol. 388] Mr. Boyken: Now, I want his opinion, if your Honor please, unless I am overruled, as a mechanical expert in this case, by looking at the design of the structure, and asking him whether he considers it a mechanical device for satisfactory operation.

The Court: But the question was directed to the practical working of the Simmons patent.

Mr. Boyken: I will modify the question. I will not tie it up with the patent.

The Court: Ask your question so that it will be complete.

By Mr. Boyken:

Q. As a mechanical expert, Mr. Abbett, familiar with oil well practice, do you consider the structure disclosed in Plaintiffs' Exhibit No. 9 to be a practical operative device?

Mr. L. S. Lyon: I object to that for the reasons stated, your Honor. In the first place, the question is asking things from the witness that he doesn't even claim himself, and

that is, that he is a practical expert, or that he is familiar with the practical operation of oil well equipment. He is asked for his opinion as to whether this is a practical device or not, which he don't know anything about, or at least he certainly is not an authority on the subject such as the court is required to listen to his opinion.

The Court: I feel compelled to sustain the objection, with some reluctance. I don't believe it is shown that the witness has had the practical experience or specialization in this particular art to know whether that tool will operate or not. The testimony the witness has given is quite a refreshing [fol. 389] experience, but I don't believe—I think it would be error to allow the question, in view of the witness' own statement. Objection sustained.

Mr. Boyken: An exception."

Q. Will you take up the Simmons patent, the patent in suit? You are familiar with the interpretation of patent drawings and patent specifications, of course, Mr. Abbett?

A. Yes, I believe I am familiar with those.

Q. Now take claim 9 of the patent which has been referred to. That appears on page 4. It reads: "A packer adapted to be positively pressed against the walls of the formation." What does that mean? I am calling your attention particularly to the words "walls of the formation."

A. That means that the packer is going to come in physical contact with the walls of the formation.

Q. In physical contact, you say, with the walls of the formation?

A. Yes.

Q. As distinguished from other packers which come in contact with what?

A. With casings or any other interposed object.

Q. Do you find that limitation in all of the apparatus claims here in suit, substantially that language?

A. Substantially the same limitation, yes.

Q. It doesn't say anything in these claims about a packer that comes in physical contact with the interior of the casing, as distinguished from the formation?

A. No. It states the walls of the formation, and the walls of the formation is the native substance through which the well bore is being penetrated.

[fol. 390] Q. What does the word "positively," as used in that portion that I read, signify to you?

A. It signifies to me, in connection with the word "pressed," that he presses that packer against the wall in such a certain and definite manner that he creates a seal with the packer.

Q. In another portion of that same claim it says, "A valve for controlling the inlet, the valve being positively controlled by movement of the pipe to open and close the inlet," etc. What does that word "positively" signify to you?

A. "Positively," in that sense, in my estimation, would be that the act of closing that valve was not one that was at random or accidental, but that it was a deliberate act to definitely close the valve.

Q. Now, in the case of the Johnston tester, that is, the defendant's tester, the Johnston tester, using the water shut-off tests, is that packer there positively pressed against the walls of the formation?

A. No.

Q. What is it pressed against?

A. It is pressed against the casing, like in the Halliburton patent.

Q. And this second portion that I have called to your attention, has the defendant's device a valve for the inlet positively controlled by the movement of the pipe?

A. No, I don't consider that the Johnston valve is a valve that is positively controlled by movement of the pipe.

Q. Now, please explain that.

A. For the reason that the Johnston valve has within it, in its structure, a yieldable element, which is a spring, [fol. 391] as distinguished from the Simmons device, in which there is no possibility for any yield, due to the fact that the valve members abut against each other at right angles to the direction of pressure on that structure, and the action in the Simmons device will, of course, be a positive pressure, where in the Johnston device there is an interposed spring, which makes it possible for the valve to operate at times without any reference to the movement of the pipe at all. Going into the well the valve can open at any time that the packer or its associated parts strike an obstruction, and when the packer is seated on the hole at any time that the seats fails, as we call it, falls away or erodes, the spring in the valve will immediately move that entire structure downwardly and close the valve. So that I do not consider, in the true sense of the word, that the

movement of this pipe produces a positive control of that valve.

Q. I understand that the plaintiff's theory of this case is that the lower valve in the Johnston device is the one they consider as corresponding to the valve set forth in the Simmons patent. Now, assume that that is the only valve that is to be considered in the Johnston device—

Mr. L. S. Lyon: You mean the main valve?

Mr. Boyken: What you call the main valve, and what we call the main valve also. There are four valves in there, but we will call it the main valve.

Mr. L. S. Lyon: You said the lower valve. There are a couple of other lower valves in there.

Mr. Boyken: What you call the main valve.

[fol. 392] Q. Now, that main valve in the Johnston device there, is that the one that you say is not positively controlled, in your opinion, by the movement of the pipe?

A. Yes.

Q. In the Johnston device may that main valve, so-called, be opened, latched open, let us say, while the device goes down through the rotary mud to the place where it is to test the formation?

A. The main valve is the valve in this Johnston exhibit indicated by yellow, and the white portions in that yellow area are the fluid passageways. We have just broken out a portion of the outer casing at each point, so that those parts could be identified, although they do extend on upwardly into the pipe. The main valve is the portion indicated by the yellow field.

Q. Now I am asking you if the Johnston tool would satisfactorily operate if that main valve was open during the time that the tool went down into the well and remained open until the sample was to be entrapped.

A. The main valve is capable of opening freely at any time during the time that the tool is being lowered to the fluid, to the point of test. Valve structures have been made this way before. It is possible, for example, to put a pin right across through there which would hold it open, and it will shear that pin off by the weight when you get down there. In other words, this main valve, as shown in the two center views, can remain in that position all the way down the well, but it is for the purpose of entrapping the sample after the sample has been let in. As in that Cox

patent, where the flapper valve entrapped the sample, this valve's only function is to close and entrap such fluid as is [fol. 393] above it when the structure is to be withdrawn from the well.

Q. What is the principal function of the so-called main valve in the Johnston device?

A. Well, it could be very properly defined as a sample-retaining or trapping valve, because that is the purpose for which it is placed there, and it has no free design or necessary valve action at any time until it does trap that sample.

Q. As I understand you, the Johnston device could be operated satisfactorily if it was lowered through the rotary mud with the main valve remaining open?

A. Yes, providing this valve (indicating) was closed.

Q. Providing the trip valve was closed?

A. Yes.

Q. I am speaking of the main valve now. It could be lowered through the rotary mud and the packer seated?

A. Yes. I hate to answer that with a definite yes, though, because when you say can this be lowered through the mud with the valve open you have a necessary adjunct to that valve, which is the trip valve, which must be closed in order to take a sample.

Q. Then let us get the relationship between the trip valve and the main valve. How do they cooperate, if at all?

A. Due to the fact that the Johnston tool has eliminated any operation which would entail the rotation of the tool to bring about any function, it has adopted a valve which operates directly on vertical force, by the weight and vertical manipulation of the drill pipe, and with such a valve it is evident that, under certain circumstances, it would [fol. 394] open going into the hole, and, if it did, it would not be what one would call a tester, which would be a device by which certain and definite evidence could be obtained. For that reason we must provide a positive means by which we collect and know that we have our evidence, and that is the trip valve, which is locked closed and can only be premeditatedly and wilfully opened, and that trip valve is necessary, due to the inherent fact that the main valve would tend to open as it ran in the hole moving vertically.

Q. Providing the trip valve in the Johnston device is closed, does it make any difference whether the main valve

is open or closed while the tool is being lowered into the well hole?

A. No. That valve is for the purpose of obtaining and entrapping a sample.

Q. Now then, suppose the tool is lowered into the well hole with the trip valve closed and the main valve open, as shown here in the second figure from the left, and the packer seated, and the perforated pipe extending in the formation to be tested. Now, with the main valve open under those circumstances, is there any fluid from the portion to be tested that flows upwardly through the main valve, and how far does it go?

A. Such fluid as is within the "rat-hole," which of necessity would be the formation fluid and the drilling fluid entrapped within the "rat-hole" when you seat, would move upwardly through that open valve until it reached here, and it could get no further.

Q. I want to get your interpretation of that portion of claim 9 which I read, "a valve for the inlet positively controlled by movement of the pipe to open and close the inlet."

[fol. 395] Mr. L. S. Lyon: I object to that, your Honor. If it is just a question of this witness' interpretation of a claim, that is a matter for the Court entirely. It is the Court's function to decide—

The Court: He can say in what manner the claim applies, I suppose, to the instrument, to the tool. I will hear his answer.

Mr. L. S. Lyon: An exception.

A. The main valve, as we call it, is at least closed after a movement of the pipe, but I don't consider that valve there as being the inlet valve, because the test chamber is from this valve on up.

Q. What do you consider to be the inlet valve?

A. I consider the trip valve to be the inlet valve, because until that valve is opened there is nothing let into the test chamber at all.

Q. And the function of the main valve, in your opinion, is what?

A. To entrap—

Mr. L. S. Lyon: He has answered that several times, your Honor.

The Court: Yes, I think he has.

Mr. Boyken: Well, I wanted to show the difference between the Johnston device and the claim, your Honor.

The Court: The trip valve is to allow the material to be tested to go into the chamber where it is saved?

A. That is right. And it is caught by that valve; it is allowed to go in by that valve, but caught by this one.

By Mr. Boyken:

Q. You mean the chamber is closed by the main valve?

A. Yes.

[fol. 396] Q. The testing fluid that is to be tested is caught or the chamber closed by the closing of the main valve?

A. It is entrapped by the main valve.

Mr. L. S. Lyon: Can I ask a question?

Mr. Boyken: Yes.

By Mr. L. S. Lyon:

Q. If you don't want that main valve closed what do you have that spring on it for?

A. That spring is on there—

Q. That keeps it closed, doesn't it, going down the well?

A. No, it doesn't keep it closed. It tends to keep it closed, but, due to the contingencies, as I have had them explained to me, the spring has its particular function when you get down the hole on the seat, and there is a tendency for that seat to get away from the structure here, and you don't want to take the sample while there is a tendency for mud fluid to come around here. And then, too, there is a tendency for that seat to break away when the valve closes. In other words, if you had the pressure of the hydrostatic head, which is sometimes 5,000 feet, coming up through here and through that valve, it would cut out that valve before you could do anything about it at all, and that spring automatically closes.

Q. Then you do want to keep that valve closed until you get the packer seated?

A. No.

Q. Didn't you just say so?

The Court: Well, don't cross-examine at this time. Go on. I want to ask a few questions myself, just to refresh my own mind. I don't know that I am any too clear on

[fol. 397] the operation of this valve. This is what you were calling the main valve?

A. Yes.

The Court: In its closed condition the contrivance is descending into the well?

A. Yes.

The Court: And of course this is air, immediately below that?

A. No; that is the fluid.

The Court: Is there fluid up to that point?

A. Yes, there would be fluid up to there.

The Court: There is no fluid above that, though?

A. No.

The Court: None above that?

A. No. That is an empty chamber.

The Court: This is an empty chamber from the main valve up to the trip valve also, isn't it?

A. Under different conditions, although there are times when we put that main valve away up the string of pipe, and it is up here so that the enormous pressure in the well won't collapse it.

Mr. Boyken: There is no fluid above the trip valve.

The Court: What closes the main valve?

A. When this moves down and compresses that spring—we will assume for the moment that this structure right through there is rigid, and this is obstructed in the hole or on its seat, temporarily obstructed accidentally going in, and this will be temporarily held, and that member will move on its seat like that.

The Court: In other words, the members down here will remain fixed and this will move?

A. Tend to move.

[fol. 398] The Court: Downward?

A. Yes.

The Court: And that opens that valve?

A. That is right.

The Court: Immediately, then, the mud, because undoubtedly mud will be in this "rat-hole", will go up and form part of the fluid that ultimately you will test?

A. Yes; but you are going to get mud in that column ultimately anyway, because you have entrapped some in the lowering. You don't really have an uncontaminated sample of this pure oil or pure salt water.

The Court: After that is firmly seated you open your trip valve?

A. Yes. You have then a passageway up through here, around through there, and on up, and when the trip valve pops up then you have a continuation of that fluid pressure up into the—

The Court: All right. Why does not the force of the liquid cause that main valve to be closed?

A. Because you have all the weight of the drill pipe—

The Court: Against it?

A. —against it, and it is sufficient to compress this spring—it is about a 20,000 pound spring, a spring like is on a box car—and you have to raise that much weight to compress that spring, and that weight will hold the valve open until you deliberately release the pressure.

The Court: And you depend upon the portion above the trip valve for your test?

A. You would have the portion to here for your test, in reality, back to the main valve, because the trip valve would be open, and the column of your sample would be from here up to the point to which the pressure took it. [fol. 399] The Court: But your main valve is not closed?

A. It is closed when you start to take it out, and that is the only time it would have to be closed, because that is the time at which you entrap the sample.

The Court: It does close when you start up?

A. Yes.

The Court: Then you have your material to be sampled extending clear from the main valve up as far as you like?

A. Up as far as the pressure in the formation took it. We will say that this valve opened accidentally coming down, and you would have whatever happens to be in the well standing there before you take your test, but afterwards it stands from there up.

By Mr. Boyken:

Q. At the time of adjournment last evening, Mr. Abbett, you were tracing the fluid in the Johnston tool as the tool was being lowered into the hole, and also as the tool was coming out of the hole with the test. Will you please refer to the chart that is before you and trace that fluid on the chart itself?

A. When the tool is being lowered into the hole the main

valve, indicated in yellow, may be in one of two positions. It may be in the position indicated at A or it may be in the position indicated at B, depending on whether or not the packer encounters any obstruction on the way into the hole which would resist the downward movement of the packer and allow the main valve temporarily to open. In that event fluid would come through the perforations, up through here, and around through there, through the main valve and upwardly to the trip valve.

[fol. 400] Q. You are now speaking of the second figure from the left-hand side of the chart?

A. Yes. And I have designated the flow of fluid. That flow of fluid would be the same flow as will take place when the valve is seated on the seat at the point at which the test might be made, or is to be made, but it might occur, due to obstructions encountered, at any time going into the hole. Then, after the packer is set, as shown in the second view, entitled "Set" at the upper end, and the fluid has reached the point designated as C on that second view, the device is ready to be tripped. At that time we will assume that the packer has wedged itself into the shoulder at the top of the "rat-hole" and that the column of fluid in the well, entirely to the top of the well, is standing above the packer and is excluded from the "rat-hole" area. When we know that this packer has been firmly seated, and that is ascertained by the fact that observation at the top of the hole will show that there is no fall in fluid, and that the main bore is in fact closed, so that the fluid column is standing stationary, then the weighted rod is dropped and the trip valve is opened, so that the fluid, which is either formation fluid or the drilling mud entrapped in the "rat-hole" when it was sealed, will pass upwardly from this level C and pass into the trip valve and on up the well, on up the drill pipe, so that we are now taking a sample.

Q. Will you just answer this one question, Mr. Abbett? Where is the sample chamber in the defendant's device? How far does it extend?

A. The sample chamber is the drill pipe that extends to the top of the well.

[fol. 401] The Court: And above the trip valve?

A. And above the trip valve.

The Court: Yes.

By Mr. Boyken:

Q. Now, Mr. Abbett, I want you to take up the Simmons patent. Yesterday I read an apparatus claim of that patent, and I am now going to read a method claim, selecting one of the two method claims, that is, claim 8.

The Court: This is the defendant's patent?

Mr. Boyken: This is the plaintiffs' patent, the Simmons patent.

Q. (Continuing.) I am going to read this claim and ask you if you find the elements of this claim in the defendant's device, and you may refer to that chart before you while I read the claim, claim 8: "A method of testing the productivity of a formation encountered in a well." Now, does the defendant's device, as it is employed, consist of a method of testing the productivity of a formation encountered in a well?

A. Yes; it is employed both to test the productivity of a formation and to make tests of water leaks in the set casing, in other words, water shut-off tests.

Q. Those latter tests, are they formation tests?

A. No. They are testing the sealing of the casing at the lower end.

Q. Now continuing, "containing drilling fluid."

A. Yes, the well contains drilling fluid of necessity.

Q. "which includes lowering an empty string of pipe into the well through the drilling fluid to adjacent the formation." Does the defendant do that?

A. Yes, the empty string of pipe being the pipe on which the testing tool is suspended.

[fol. 402] Q. It is always adjacent the formation?

A. It is adjacent the formation in making a formation test but it is in the casing while making a water shut-off test.

By the Court: I am not entirely clear as to that. You say it is adjacent to the formation when making a formation test?

A. Yes, sir.

Q. You are speaking now of what? Of the drill pipe or your device?

A. Will you please read that question again?

By Mr. Boyken:

Q. I was going to read the claim up to that point which is the subject matter that we are talking about. "Claim 8.

A method of testing the productivity of a formation encountered in a well containing drilling fluid, which includes lowering an empty string of pipe into the well through the drilling fluid to adjacent the formation."

A. That states that the empty string of pipe would be lowered down the well to a point adjacent to the formation. In a water shut-off test it is lowered to a point within the casing and remains within the casing but is not at a point adjacent the formation. The formation is below it.

Q. Could you make that any clearer by referring to Defendants' Exhibit Q in this case, showing the difference between a casing test and a formation test?

A. By reference to Exhibit C, it will be seen that the first view is entitled "Casing test, water shut-off," and in that view there is shown the section of casing and the drill pipe is there designated as lowered into that section and [fol. 403] the packer set adjacent the wall of the casing above its lower end to test the effectiveness of the seal of cement which is indicated around the casing and standing up within the formation bore. That is the water shut-off test, in which they are testing possible leakage here, in conformity with the rules and regulations of the State. In the other two views, next adjacent the one I have just referred to, there are shown two types of tests where the tool is lowered to adjacent the formation, and the packers, as are here shown, one being a straight hole packer or sleeve packer, that packer is in physical contact with the formation and the side walls of the bore, and the other, being a "rat-hole" packer, is in physical contact with the seat at the mouth of the "rat-hole" and in physical contact with the formation. These two views, showing formation tests, as designated below, are tests in which the packer comes in physical contact with and makes a positive seal-off between the formation area below and the formation area above.

Q. I read a portion of the method claim, and I will continue. "the pipe carrying a packer." In the defendant's device does the pipe carry a packer?

A. Yes. A packer is suspended from the pipe.

Q. "and having a valved inlet at its lower end which is closed while the pipe is being lowered."

A. That phrase says that the pipe carries a packer and has a valved inlet at its lower end.

Q. Where is that valved inlet in the defendant's device?

A. The valved inlet in the defendant's device is the trip

valve. It is the inlet at the lower end of the pipe and is the [fol. 404] valve which controls the inlet of fluid to the pipe. Without that valve opening there would be no inlet into the pipe.

Q. Continuing the claim, "setting the packer above the formation to seal off the drilling fluid from the formation."

A. That is shown. The packer sets against the formation and above the formation area which is to be sealed off so that the drilling fluid will stand above the packer and be excluded from the formation area to be tested.

Q. Suppose there was a shut-off test being made?

A. With a water shut-off test the packer would be set within the casing and above the cement joint which was to be tested.

Q. Continuing the claim, "opening the valved inlet after the packer is set to permit cognate fluid from the formation to enter the pipe."

A. That is opening the valved inlet after, or the trip valve after, the packer is set to permit the fluid to come into the pipe, that could not get in unless that valved inlet was open to permit it.

Q. Continuing, "closing the valved inlet against the entrance of fluid from the well by movement of the pipe."

A. We never close the valved inlet after it is once opened because the structure is to remain open to give evidence of the test.

Q. You are referring, now, to the trip valve?

A. To the trip valve.

Q. What valved inlet is closed in the defendant's device?

A. The main valve is closed in the defendant's device but that is not necessarily the inlet valve because that valve [fol. 405] may open or close at any time as the device goes into the well. And its opening and closing does not of itself permit any fluid to come into the pipe but it is closed by movement of the pipe and the spring that assists that movement after the structure has stood for a desired period of time to permit the fluid to flow into the pipe.

Q. What is the principal function performed by the main valve so-called in the defendant's device?

A. The purpose of the so-called main valve is to entrap the samples when it is closed as shown in this chart and designated as coming out, the column of fluid then extending from that main valve up through and around the trip

valve and up into the tube as far as the formation pressure caused it to rise. \*

By the Court:

Q. You say the purpose of the main valve is to entrap the sample?

A. Yes.

Q. Just how does it do that?

A. As seen in——

Q. The entrapment begins as soon as you begin to raise the drill pipe, does it not, or does it?

A. The entrapment begins as soon as enough weight is taken off of this spring by raising the drill pipe to cause the valve member indicated in yellow to move up onto the black seat.

\*Q. I would think it would move down rather than up. Why doesn't it move down?

A. You have the hole and the seat on which the packer is seated below you.

[Vol. 406] Q. Yes. If that valve is open, why wouldn't the sample have a tendency to flow back through the valve instantly the pipe is raised?

A. For two reasons. That sample has been placed in there under the pressure of the fluid in the formation and, as long as the valve is open, it will be maintained in there in column under a pressure of the formation. That pressure forced it in and, as long as the valve is open, it will just keep it in there.

Q. Is the pressure from below what closes the valve?

A. No; the pressure below does not close the valve.

Q. I am not clear on what closes the valve. I have no doubt it has been explained probably more than once but I don't remember it right now.

A. When you lift up on the drill stem at the upper end of the well you eventually relieve sufficient pressure on this spring, and, if you will note, the spring is shown as compressed between a shoulder on the member that moves up and a shoulder on the entire structure that includes the packer. And that spring pressure, in addition to the weight of the string to the top of the well, is normally exerting its force to hold the valve member indicated in yellow and the outer housing carrying the valve seat, indicated in black, to hold them with the valve member downwardly. Then,

when you pick up on that string of pipe until this spring is holding that entire structure downwardly, and when sufficient pressure is relieved, the spring at the same time holding the outer portion, including the valve seat, downwardly, then the valve member will move up against that seat and seal.

[fol. 407] Q. It is actuated by the spring in moving up, is it?

A. The spring is holding the valve down.

Q. When the spring is compressed?

A. Yes.

Q. When the tension is relieved the spring, of course, goes back to its original position, and that puts the valve back to a closed position, is that correct?

Mr. L. S. Lyon: Your Honor, I don't want to interfere—

The Court: Perhaps somebody had better interfere.

Mr. L. S. Lyon: If you will remember Mr. O'Neill's testimony, it was brought out that the valve could be closed by lifting the pipe whether the spring was there or not. This head on the valve has to move up and the only way you can move it up is by lifting the pipe. The spring is holding this thing down here with the packer down. The spring can't push it any further. So the spring can't help raise it, and you have got to lift the valve head up until it hits the seat. That is what Mr. O'Neill said and it seems to me that must necessarily be true. It is all in the testimony.

Mr. Boyken: I have a little model here that I think might help us in showing that action.

The Court: When I tell you what I don't know you will probably be able to supply it. As I said before, I have no doubt this has been explained again and again but I am not clear on what closes that valve as soon as the pipe begins to rise.

By Mr. Boyken:

Q. Now, Mr. Abbett, will you answer that question, please? You have a model in your hand showing the interior section on this chart.

[fol. 408] The Court: Can't it be shown by reference to this?

Mr. L. S. Lyon: That really isn't complete, your Honor. That is diagrammatic.

The Court: Then let Mr. Abbett proceed.

A. I have in my hand a small model of a tool, with a portion of it cut away, of the wall, so that we can see what happened inside of it. Here is your anchor pipe at the lower end, and on it is the packer. It so happens that this packer is shown here as having a little play, but that is immaterial. The packer is on its seat, and this is held down here by the weight of the pipe above it.

Mr. L. S. Lyon: This spring is pushing down on this, isn't it?

A. Yes. If you turn it this way you will see that the spring which is acting—

Q. In pushing this down?

A. Will hold it down so that—now, when it is in this position with the weight on the seat, the main valve member moves downwardly, so that those ports shown in that yellow portion there on the chart are exposed to this interior here.

Mr. L. S. Lyon: That is because the packer can't go down any further? It is down just as far as it can go, and you lower the drill pipe to open that valve?

A. That is right.

Mr. L. S. Lyon: When you lift up on the drill pipe the spring is still pushing the packer down?

A. Still pushing it down.

Mr. L. S. Lyon: And therefore the only thing that closes the valve is lifting the drill pipe, the spring pushing or tending to push the packer down, and it can't go any further?

[fol.409] Mr. Boyken: I would like to get the witness' version of this so that we can get it in the record.

The Court: Let me suggest, Mr. Lyon, let Mr. Boyken take charge here. Remember that you are explaining to me what makes the valve close, and of course that is the business of the defendant to do. Now go ahead. I am far from understanding it now.

The Witness: Well, your Honor, do you see how the fluid will be shut off when the valve is in closed position?

The Court: It is in closed position now?

A. Yes.

The Court: I understand that. The fluid is around in this chamber.

A. But it can't get any higher when it is in the position shown.

The Court: No.

A. When the weight is put on that valve opens.

By Mr. Boyken:

Q. Where does the fluid go?

A. It comes through the packer and up into a port above the packer, and then through these holes here.

Q. And then moves inside the chamber?

A. Yes.

Q. And out, and then goes up to the trip valve?

A. That is right.

Q. When it is closed where is it shut off with respect to the operation of the main valve?

A. The shut-off is right in this main valve, when those ports go back up in there.

[fol. 410] Q. Those ports are sealed, then, so that there is no further passage of liquid upward?

A. That is right.

The Court: They are sealed by reason of the pull up?

A. This lift up. This member is fastened right through and attached to the drill stem. You lift up and the spring holds the valve member downwardly until sufficient weight has been relieved from above to permit these two members to separate sufficiently to allow that play, at which time the valve is closed.

By Mr. Boyken:

Q. Now then, when that valve is open the fluid moves upwardly to the trip valve?

A. Moves upwardly to the trip valve.

Q. And that trip valve is opened by the—

The Court: I understand that.

By Mr. Boyken:

Q. All right. Then the operation of the main valve is caused by what—the movement of the pipe?

A. Is caused by the combined movement of the pipe and the action of that interposed spring.

Q. That opens and closes the main valve?

A. Yes.

Q. I was reading claim 8, Mr. Abbett, and I had almost reached the end. But let me repeat the last portion: "Closing the valved inlet against the entrance of fluid from the well by movement of the pipe." That is closed, I understand, by the operation of the main valve?

The Court: Is that not what you have explained?

Mr. Boyken: Yes, the operation of the main valve.

[fol. 411] Q. Now, the last part of it is, "Raising the pipe so closed to remove an entrapped sample and the packer from the well." Is that done in the use of the defendant's device?

The Witness: May I have the last question and answer preceding this?

Mr. Boyken: That goes quite a ways back.

Mr. L. S. Lyon: That has nothing to do with this.

A. All right. It is my understanding that the statement was made a moment ago that the movement of the spring in the pipe closed the valve inlet, and I didn't make that statement, as I recall it.

Q. What is the fact?

A. The fact is that I have testified that I considered the trip valve to be the valve inlet for receiving the sample, and the pipe doesn't move to close that valve inlet. The pipe, if anything, in its movement closes the main valve, which is the sample entrapping valve.

Q. The trip valve, as I understand, cannot be closed?

A. No.

Q. Now, that is clear. I guess that finishes the claim.

Mr. L. S. Lyon: Well, you haven't answered the question. The witness interfered and put up an argument about whether the trip valve or the main valve was the valve that opens and closes, and didn't answer the last question at all.

The Court: The witness has clearly designated the trip valve and what the witness calls the main valve.

Mr. L. S. Lyon: Yes, but he was asked a question as to whether or not, in the operation of the defendant's device, [fol. 412] after the valve had been closed you raised the pipe to remove an entrapped sample and the packer from the well. He hasn't answered that.

The Witness: I thought I had been misquoted, and I wanted to get that straight.

By Mr. Boyken:

Q. Let me read you the last part, then, of claim 8, "Raising the pipe so closed to remove an entrapped sample and the packer from the well."

A. Yes. That device of Johnston, after the sample has been entrapped in there not by closing the trip valve or the inlet valve, but by closing the main valve, when the sample has been entrapped in there, it will be removed from the well within the pipe and the packer will be carried with it, if there is any packer left in the hole to get out. Sometimes the packers are torn and mutilated so badly that parts of them remain in the hole, but to all intents and purposes they intend to take the packer out.

Q. Are you familiar with the Halliburton "J" slot device in evidence in this case?

A. Yes.

Q. Yesterday in going over the prior art we encountered a number of flow devices, which you pointed out. Will you please state what is meant by "flow device" as it appears in the prior art?

A. A flow device, as it appears in the prior art, is a structure including, primarily, a tube, as shown in the sections out of the Chamberlin Government report, a tube which extends into the well and is provided with means for closing off an area of the formation from which the desired fluid is to be obtained, so that the water or other fluids in the well [fol. 413] are excluded from the formation, and so that the pressure of the column of water or other fluids in the well is excluded from the area to be tapped or from which the productive fluid is to be taken. This insures that the pressure of the undesired fluids which may be in the well and their contamination will be excluded from an area of the formation, so that, either by the pressure of the fluid in the formation or by pumping operations, these fluids may be drawn from the lower confined area through the upper portion of the well, without any contamination and while utilizing the pressure of the formation in removing those fluids into the pipe, or while utilizing some pump means for drawing those fluids into the pipe. In either event it is necessary in a flow device, as will be evident, that there must be a shut-off between the area from which materials are intended to be extracted from the fluid and the remaining upper portion of the well.

Q. What instrumentality causes that shut-off?

A. Some form of packer.

Q. Is a packer essential, in your explanation of a flow device?

A. Yes.

Q. Why is that necessary?

A. That is necessary in order to exclude all of the other liquids and fluids which might occur in the well from the area from which the desired fluids are to be obtained, and that was the practice, as shown in the Government publication, and is the practice now used in connection with oil well production.

[fol. 414] Q. If you had no packer could you get the fluid to flow up through that interior pipe?

A. It would, of course, be evident that if we introduced a free pipe down into a well, by suction of a pump mechanism or by the pressure of fluid, if it was sufficient, fluid would flow into that pipe and could be withdrawn from the well. But in well structures where it is desired to obtain the fluid from a specific area it would be necessary to pack off the remaining length of the well from that area.

Q. Does the Franklin device, as shown in the patent, illustrate a flow device?

A. It describes a flow device and states that this structure is a valve for such a device.

Q. Now, Mr. Abbett, have you caused to be made a model of the Simmons device as shown in the patent in suit?

A. I have.

Q. How does that differ from the other model that is in evidence and Exhibit No. 9?

A. The main difference is that in the Simmons patent drawing there is an arcuate relieved portion on the upper valve element which is exposed to the fluid outside, and a stop pin on the lower valve element which is also exposed to the fluid outside, and in the device Exhibit 9, and also the model which I have seen, these members are cut in the face, and the outer wall of the structure would be perfectly smooth. Otherwise the model I have in my hand completely illustrates the structure of the Simmons patent as shown in its drawing, this being a coupling to which the tubing would be placed, and is not shown in the drawing. That is merely [fol. 415] a coupling that would be on the upper end of this member to connect to such tubing or drill pipe above. The

ports are through this device so that they would be moved to their two positions.

Q. You needn't explain that, because it is already in evidence. But the difference, as I understand it, is the exposed slot and the pin?

A. And the pin.

Mr. Boyken: We offer this model of the Simmons device in evidence.

(The model was admitted in evidence, as Defendants' Exhibit L.)

By Mr. Boyken:

Q. Have you also a model of the Franklin device as disclosed in the Franklin patent?

A. Yes. And that model is made in accordance with the drawing in the patent, showing the valve members that can be found within it, and indicating the stop means to limit its rotation so that the valve ports may be brought to an aligned or misaligned position.

Q. Now I hand you Defendants' Exhibit J, which is the packer concerning which you have already testified, and ask you if that is substantially the form of packer that was known in the time of Franklin.

A. This packer, which has already been introduced in evidence, was the Armour packer shown in Carll's report, and we prepared a thread so that the Franklin tool of 1882 could be mounted on the Armour packer, patented in 1875, as showing the Franklin tool mounted above the packer, both structures being of 1882 or earlier.

Mr. Boyken: We offer in evidence the model of Franklin patent, which is now assembled with the model already in evidence as Defendants' Exhibit J, and ask that the model [fol. 416] of Franklin be marked defendants' exhibit, the next letter.

Mr. Richmond: I object to it because it isn't made in accordance with that. He can't justify that upper portion of the device.

Mr. Boyken: The witness said that it was made. Now you may cross-examine him on it at the proper time.

The Court: I was going to say that I understood him to say that the upper portion was the Franklin device.

Mr. Boyken: Yes, your Honor.

The Court: Did I understand him correctly?

Mr. Boyken: That is right.

The Court: And he attaches the Franklin device to another device that was known at that time?

Mr. Boyken: The Armour patent.

The Court: But that is not an instrument or device designed in any one patent or shown in any one patent, is it?

The Witness: No, it is not, but—

Mr. L. S. Lyon: I object to this argument. That is for counsel.

Mr. Boyken: Let me answer your Honor's question. The upper portion, the witness said, is a model made in accordance with the Franklin patent.

The Court: Correct.

Mr. Boyken: The lower portion is already in evidence as a packer that is illustrated in the prior art as of the same date as the Franklin patent.

The Court: It is already in evidence, is it?

[fol. 417] Mr. Boyken: It is already in evidence in this case, yes, your Honor. The tag here is marked Defendants' Exhibit J.

The Court: Now, you combined the two, and you are offering that as a new exhibit?

Mr. Boyken: No, your Honor. I am merely offering the Franklin portion, the new portion. The other one is already in evidence.

Mr. L. S. Lyon: We would like to reserve the objection. We will have to establish the basis for it on cross-examination, your Honor.

The Court: Well, let the objection be overruled now.

Mr. L. S. Lyon: An exception.

The Court: I am a little bit in doubt about the attaching of one exhibit, which is admissible, there is no question about that, to something already in evidence. I don't know exactly about that. That is a little bit new, it seems to me, isn't it?

Mr. Boyken: Well, we have two exhibits here. One is in evidence and one we are offering in evidence, and we are physically attaching these two things.

The Court: This is the true situation, that counsel may very readily take the Franklin device and show how it operates attached to it, by way of argument. Strictly, I don't believe that the combined instrument is admissible as

such, so, in order to make it admissible, you have got to detach it.

The Clerk: That will be Exhibit M.

The Court: I think that is the correct view to take.

Mr. Boyken: Very well. We will detach it.

[fol. 418] Mr. Boyken: Before Mr. Lyon cross-examines I think perhaps we ought to have this diagrammatic drawing, on which the witness has made certain markings, in evidence in order to illustrate his testimony and I offer it as Defendants' Exhibit N. That is all.

The Court: Very well. Let it be admitted.

The Court: Let me ask a question here. Is the defendant's device patented?

Mr. Boyken: Yes, your Honor.

#### Cross-examination.

By Mr. L. S. Lyon:

Q. Mr. Abbett, you are a professional witness in patent cases, are you not?

A. Well, now, I don't know how you would term the word "professional." I am, of course, paid, and in the course of twenty years' patent soliciting I think I have appeared as a witness six times.

Q. You are employed by different people to testify for them in their patent cases, is that right?

A. Yes.

Q. You testify in a patent case if you are employed in it, irrespective of whether it relates to the oil industry or some other industry, don't you?

A. I have appeared in cases other than the oil industry.

Q. What other kind of cases?

A. In 1923 I appeared in a case relating to automatic can machinery, the machinery having been drawn by me. The cases that I have appeared in in recent years, which have been four, as I recall it, have all been in connection with the oil industry.

[fol. 419] Q. You never have testified in any patent case involving anything except the oil industry with that one exception of that automatic can-making machine?

A. I said there were six cases in twenty years. As I recall it, there was another case, which was an automatic baking machine.

Q. Let's see. Are you just as much an expert in the can-making business as you are in the oil industry?

A. I haven't qualified as an expert in an industry. As I understood, I qualified as being thoroughly familiar with patents due to my experience and my work in connection with investigating such matters.

Q. Did you qualify just as much in that can-making machine case as you have as an expert in this case?

A. Yes; as to knowing what the patents and the art and the literature said.

Q. And also the same thing is true with this baking machine case that you were in?

A. Yes.

Q. You testified in the trial before Judge Bryant, covering largely the same matters that you have covered here, did you not?

A. I did.

Q. In regard to this same tool and the Simmons patent?

A. Yes.

Q. Were you employed in that case by this defendant in this case?

A. No; I was not. I was employed by the Johnston Formation Testing Company of Texas.

[fol. 420] Q. And in this case you are employed by whom?

A. I am employed by the M. O. Johnston Oil Field Service Company.

Q. And paid by them for your testimony?

A. Yes.

Q. Is there any difference between drilling fluid that is used in drilling an oil well and the fluid that the well itself can produce?

A. The term "drilling"—

Q. Will you just answer that yes or no and then give any explanation?

A. That is very difficult to answer by yes or no. I will be glad to explain what I consider the mud at the well to be, as it is known in the industry at the present time.

Q. I am not asking you to make an argument or to consider something. Do you know what rotary mud is that is used for drilling a well?

A. I do.

Q. Do you find that naturally produced by an oil well?

A. Yes; I find that naturally produced by an oil well. The mud at the well will run about 1.2 in weight but the rotary mud, as it is termed at the present moment, often contains an additional material which is a weighting material.

Q. You say these flowing wells produce mud?

A. I didn't say flowing wells produce mud.

Q. I am talking about a flowing well. Does it produce drilling mud?

A. No.

[fol. 421] Q. What is it in the operation of drilling a rotary well that creates the pressure in the well that may hold back natural fluids that are seeking to gain access to the well?

A. The drilling fluid.

Q. And that drilling fluid is different from the natural fluids that you are interested in detecting, is it not?

A. It may be the same fluids with an additional amount of mud that is found at the well, or, when one is to be made heavier, an additional amount of weighting material.

Q. What does a flowing well produce?

A. What kind of a well is it?

Q. I am asking you. You testified about flowing wells here. A flowing well supposed to be in an oil field.

A. If it is a water well, it will produce water, and, if it is an oil well, it will produce oil.

Q. Where they put these flowing devices in flowing wells what is the well producing?

A. It is usually producing a fluid which is under pressure.

Q. I know that but what fluid?

A. It would depend on what kind of a well it was. It would produce any kind of a fluid that was contained within the well.

Q. Do you know what a flowing well is out in the oil fields?

A. Yes. A flowing well in the oil fields is a well usually that produces either oil or gas.

Q. It is not producing rotary drilling mud, is it?

A. No.

[fol. 422] Q. Is there any rotary drilling mud in a flowing well when the well is equipped to produce?

A. When it is equipped to produce?

Q. Yes. When you find you have a flowing well and you equip it with these flow devices is the well filled with rotary mud?

A. Very often the testing devices are in wells when they produce.

Q. Is there a difference between a well that is being drilled and a well that is on production?

A. Yes.

Q. What is the difference?

A. The difference is that when a well is on production all drilling operations have ceased and it has been set up and equipped to extract from that well whatever material might be in it.

Q. Are these flow devices that you referred to a few moments ago installed in producing wells or in drilling wells?

A. In the literature it shows them installed in both wells being drilled and wells that, as you term it, are on production.

Q. Do you know from the Franklin patent whether he is referring to the use of his device in a producing well or a drilling well?

A. I don't know.

Q. You don't know?

A. No, because from an examination of the technical literature which has been produced here—

Q. You don't have to argue with me why you don't know. Just say you don't know.

[fol. 423] Mr. Boyken: Just a minute. I would like for the witness to be permitted to answer the question.

The Court: Yes. Let the witness continue his answer.

A. I don't know because from the technical literature which has been produced here Carll describes the practice at the time of Franklin and says that the flow structure or flowing device, including a tube and a packer, was put into the well and taken out many times during the operation of drilling the well. So that I do not know whether, when Franklin provides a device which he says he prefers to put in the well closed and take out of the well opened, he was trying to perform one of the tests of Carll or was flowing a well.

By Mr. L. S. Lyon:

Q. If he was flowing a well, he was not confronted with any problem of sealing off the well so as to separate the natural fluids that the well could produce from drilling mud, was he?

A. Not from drilling mud but from the rest of the liquid that was in the well.

Q. That would all be the natural fluids in the well, would it not?

A. Yes.

Q. And he wouldn't have to test the well to know the well would produce those, would he? They wouldn't be there unless they were naturally produced?

A. Will you please read that question?

(Question read by the reporter.)

Mr. L. S. Lyon: Strike that last part out of the sentence. That doesn't make it any clearer.

Mr. Boyken: Now, will you read the first part of the question?

[fol. 424] A. Wasn't a part of that question ahead of that?

Mr. L. S. Lyon: No.

A. All right. Then, please read that one.

(First part of question read by the reporter.)

A. He wouldn't have to test the well to know that there was fluid in the well but, if it was essential for him to know the difference between fluids coming from different strata of that well, he would have to make a test to exclude one portion of that well from another. And, if he was drilling an oil well, he would want to exclude all the native fluids in the well from the testing zone so that he could ascertain what was in that zone.

Q. But there wouldn't be any fluid in the Franklin well except the fluid that was produced by the well, isn't that correct?

A. If the well was on production, no.

Q. Isn't that the way it is described in the Franklin patent?

A. I stated that I couldn't tell from the Franklin patent whether the well was on production or that he was using this

device in it and making tests in order to ascertain the condition of the well.

Q. Where do they get the rotary mud to drill an oil well with? Do you know?

A. Yes.

Q. Where?

A. At the present time they get the rotary mud from concerns who sell a product which is known in present days as rotary mud, and it is mixed with liquid in the well and causes it to fill.

[fol. 425] Q. And it is manufactured and put down the well, is it?

A. Yes. It is ground and put in the well.

Q. That is the mud that creates the hydrostatic pressure during the drilling of the well, which may hold back any natural fluids that you encounter as you drill the well, so that you don't detect it at the top of the hole, isn't that right?

A. That is the mud they use now. Carll described putting mud—or mixing water with the mud that was in the hole during drilling.

Q. The Simmons patent and the method of that patent and the purpose of it are to be able to get the sample of those natural fluids notwithstanding that rotary mud, without having to take that rotary mud out of the hole, isn't that correct?

A. Yes. It is to enable you to get a sample of the native fluids in the formation as excluded from anything that might be in the hole.

Q. But particularly——

Mr. Boyken: Just a minute. Finish your answer, Mr. Abbett.

A. I understood Mr. Halliburton to say that any liquid within the hole excluded would be an infringement and, therefore, I make the statement that the structure would exclude any liquid from the testing zone.

By Mr. L. S. Lyon:

Q. But the object of the method described in the Simmons patent is to enable you to overcome the pressure of the mud fluid without removing the mud fluid or drilling fluid from the well and still get a sample of whatever natural fluids the [fol. 426] well might produce if it wasn't for the pressure of the drilling mud, isn't that correct?

A. That is right; and equally applicable to any other kind of fluid that might be present.

Q. There is no such drilling mud to separate from the natural fluids in a producing well, is there?

A. Not in a producing well.

Q. Therefore, you don't know whether there was any such drilling mud in the well the Franklin patent refers to, do you?

A. No; I don't know that there was drilling mud there. And, in view of the description of Carll, I do not know that it was not there.

Q. At the date of the Franklin patent it was the practice to case the wells with a casing, was it not?

A. At some times.

Q. And to set those casings with a packer, was it not?

A. It was. But the casing did not always extend entirely to the bottom of the well, as shown in illustrations from the Pennsylvania reports to which we have referred.

Q. I will show you Figure No. 2 on this report No. 3, Plate 14, which is in evidence here in the publication that you referred to. Does this illustrate a well in which casing has been set with a packer on the casing?

A. It does.

Q. And it shows also within that casing and extending through it down into the well a tubing through which the well is to produce, does it not?

A. Yes.

Q. And there is no packer on that tubing, is there?

A. Not in the center view but there is in the view at the extreme left.

[fol. 427] Q. This view at the extreme left shows no casing in the well, does it?

A. It has this length of casing here, which goes down to bedrock.

Q. That is the surface pipe?

A. Yes; that is the surface pipe.

Q. You would distinguish surface pipe from a casing that is used as a water string and set with a packer to shut off the water?

A. Yes. But we have been using the term "casing" rather indiscriminately here, even including, as designated in the Simmons patent, where it states casing and may mean casing or drill pipe.

Q. What does Carll say this surface conductor is that you referred to in Figure 1? What does he say it is made out of?

A. That may be made of wood.

Q. He said it was made of wood, didn't he?

A. Yes; he did.

Q. And there was no pipe in this well at all except this one tube?

A. That is right. And from the wooden portion down was open formation against which the packer set.

Q. And those were small wells, were they not?

A. Yes.

Q. What they call small wet wells in Pennsylvania, isn't that right?

A. That is right.

Q. The full size of the hole of this well here is 4 inches, isn't it?

A. Yes.

[fol. 428] Q. On the other hand, where they used a casing with a packer to shut off the water, they called the well a large or dry well, didn't they, as distinguished from this small wet well?

A. They did in some cases; yes.

Q. That is what they are called in these reports you had here, aren't they?

A. Yes; they are called that in these reports.

Q. So, therefore, it was common practice in Pennsylvania at the time in question to drill a well, put in a string of casing to shut off the water and set that casing with a packer, and then put a tubing in the well through which the fluid flowed in production, and have no packer on that tubing? That is correct, isn't it?

A. In view of the—

Q. Can you answer that yes or no?

A. I can't say whether that is correct or not. I can say that is what it shows in the view here, that that is what was done in connection with well No. 2. That casing was run part way down and packed by a packer, and that an unpacked tube was extended through it. In well No. 1 the well was partially enclosed by a tubing member and the tubing extended downwardly and has a packer on the formation.

Q. Is there any statement in the Franklin patent which discloses whether or not his device is to be employed in what

was known as the dry, large type of well or the small wet type of well?

A. No; other than it was used in connection with a well that had a packer in it.

[fol. 429] Q. And that packer may have been on the casing as far as you can tell from the patent? That is necessarily true, isn't it?

A. No.

Q. You don't know what type of well it was?

A. No; I don't know what type of well it was.

Q. If it was the type shown in this exhibit, Figure No. 2, that you have just referred to, there could have been a packer in that well on the casing, isn't that right?

A. There could have been a packer on the casing, but that would have no reference to the point at which Franklin wanted to put his valve.

Q. How do you know? Does he say why he wants a valve above the packer?

A. No. But he wants to control the fluid coming through it.

Q. Does he say why he wants the valve positioned in the well above the packer?

A. He doesn't say that any more than Carll tells you why he wants the packer on the tubing in Figure 1 of this drawing.

Q. Do you know whether or not it would be safe to run a device like shown in the drawings of this Franklin patent in a well if you were going to allow the device to be lowered down below the casing, if there was a casing in the well, set with a packer? Do you know enough about the business to tell that?

A. No. I wouldn't answer that question.

Q. It may be possible that Franklin was directing you to keep that device above the packer so that you wouldn't [fol. 430] get down below and hang up and be unable to pull it out, isn't that correct, as far as you know?

A. I don't know.

Q. Franklin doesn't say anything in his patent about in which order you shall open and close his valve as compared to when you set or release a packer, does he?

A. No; he doesn't.

Q. He doesn't say anything about the packer being lowered into the well or pulled out of the well with the valve device, does he?

A. No; he does not. And my study of the file wrapper of the Simmons patent says it is immaterial whether the packer is pulled out or not.

Mr. L. S. Lyon: I move to strike the last as not responsive to the question, about the Simmons patent, your Honor.  
The Court: Denied.

By Mr. L. S. Lyon:

Q. Claim 18 in this case calls for pulling this packer out with the Simmons valve, doesn't it?

A. 18?

Q. 8.

A. 8 does but 18 does not.

Q. But the Simmons patent very specifically says that you are to close the valve before you release the packer after taking a test, is that correct?

A. Yes; that is what it says.

Q. There is no such statement in the Franklin patent, is there?

A. No; there is no such statement in the Franklin patent. But he says he wants to close his valve before he removes the structure from the well, and Carll states that it was [fol. 431] common to put a tube with a packer on in the well and remove it many times during the process of drilling the well.

Q. You are unable to find in the prior art anywhere that anybody prior to Simmons ran a single string of pipe into a drilling well, the pipe carrying a valve structure for the lower end and a packer, and operable from the top of the well by movement of the pipe, so that you could set the packer above the formation to be tested to exclude the drilling fluid, so that you could open the valve, take a sample from the formation, and could then close the valve, thereafter releasing the packer and bring out the pipe containing trapped in it a sample of the natural fluid that was recovered below the packer?

A. I contend that I can find it.

Q. In which patent?

A. For the first patent I find it in Franklin, as disclosed by the condition of the oil and well-drilling art of that day, and the disclosure of the Franklin patent and the inter-

pretation that we have a right to make of that patent in view of the practice of that period.

Q. Do you say that that is specifically described in the Franklin patent?

A. I say that when Franklin——

Q. Just answer that yes or no.

A. Franklin doesn't use your words; no.

Q. He doesn't describe what I have stated in my question, does he, specifically in his patent?

A. No; not in those terms.

[fol. 432] Q. He doesn't describe that subject? You have said that you don't know whether he has a packer on that string or not.

A. I state that the Franklin patent——

Q. Just answer the question. Does he describe that subject or doesn't he?

Mr. Boyken: If your Honor please, I would like for this witness to answer the question and, if it is not responsive, it can be stricken out.

Mr. L. S. Lyon: It is cross-examination, your Honor, and the witness should not be allowed to evade?

The Court: Answer the question.

A. Will you please read it?

(Question read by reporter.)

A. And I answered Franklin.

Q. What?

A. I answered Franklin.

Q. The question is is that all described and can you point that all out, described in the Franklin patent?

A. Not in such words but that patent and every other patent is addressed to those skilled in the art.

Mr. L. S. Lyon: I object to the argument, your Honor.

Mr. Boyken: Will you permit the witness to answer the question? And what is immaterial can go out.

The Court: The witness may answer. Continue your answer.

A. That patent and any other patent is addressed to those skilled in the art, and I attempted to faithfully ascertain what the knowledge of a person——

[fol. 433] The Court: It doesn't make any difference what you did. You say that because of the fact you have recited,

that is, that the patent is addressed to those skilled in the art, you draw the inference that it does exist?

A. Yes.

By Mr. L. S. Lyon:

Q. Do you know how long it was after the Franklin patent issued before anybody ever did what I recited in my question?

A. No. I don't know they didn't do it then.

Q. In your practice as a patent solicitor and your wide acquaintance with the oil drilling industry that you have referred to did you ever see anybody doing it prior to 1926?

A. I wasn't associated with the oil industry at that time.

Q. Well, do you know of anybody doing it prior to 1926, when it was first introduced by Mr. Halliburton?

A. Do you mean by actually performing the operation?

Q. Actually practicing the method which I explained in my question.

A. I have had information that others have done it but I will not make the definite statement that I personally know it.

Q. You have tried in every possible way for some two years now to find something or everything that could be found that could be used as a defense against this Simons patent, haven't you?

A. An effort has been made to locate prior uses, prior publications and prior patents; yes.

[fol. 434] Q. And today, since 1926, this method that I have stated in my question is in common use in the industry, isn't that true?

A. Yes.

Q. And you are unable to find anywhere prior to 1926 any definite proof that you can offer here in court of that method ever having been used? That is correct, isn't it?

A. No. I think that Carll and the other publications here show that the practices they employed at that time used such methods.

Q. That is the only proof you have, is that correct?

A. And in connection with the patent art.

Q. And in connection with any actual art?

A. Well, persons have stated that they used these methods but as to getting the proofs of them sufficient to bring them into court—we haven't obtained them.

Q. Didn't Mr. Johnston go into this business because it was something new?

A. I didn't know Mr. Johnston when he went into this business.

Q. You are testifying to the court that one skilled in the art would have been able to have told from the Franklin device, or from the Franklin patent and this other stuff that you have brought in here, that you say he would have added to it, that this was the way to test wells. Now, the proof of that is did anybody see that from those publications and patents.

A. I don't know.

Q. You don't know whether they did?

A. No.

[fol. 435] Q. Didn't you try to find out?

A. We tried to find out certain things relative to prior uses, yes, but as to whether they saw these publications or not we made no effort to determine.

Q. Do you think they used this method back there in Pennsylvania and then it became abandoned and was a lost art? Is that your idea?

A. No; I don't think it was a lost art.

Q. Do you know of any place it was used here in California throughout all the oil industry in California up until the knowledge of the Simmons invention was brought here?

A. No; I don't. But, as I understand it, there were transitions in drilling conditions from time to time which caused various practices to be used on those occasions as drilling practices changed.

Q. Until this Simmens method was brought to California how did they test formations in drilling oil wells in this State?

A. If I can rely upon information received, they tested them in some cases by the Cooper patent.

Q. Do you know—

Mr. Morgan: Do you mean personal knowledge and observation at that time?

Mr. L. S. Lyon: Yes.

A. No. I wasn't connected with the industry. I know that the common practice was bailing.

Q. The common accepted method was to set a string of pipe and cement it and bail out the drilling fluid and then see what natural fluid came into the well, isn't that right?

A. That wasn't the only method.

[fol. 436] Q. Well, that was the common method?

A. Yes; that was the common method. Another method was to——

Q. That was the only method that they had of testing the productivity of a formation, wasn't it?

A. No. They had another method, which was to set a string of pipe and a packer in the well at a depth and bail from the confined area, as described in Cooper.

Q. They had to bail by any of these methods before they got knowledge of this Simmons method, as far as you know?

A. As far as I know. Those were the practices in California as far as I know.

By the Court:

Q. One practice was to take out the fluid from the well and find out what was in the bottom of the hole?

A. Yes.

Q. And then the other practice was what?

A. The other one was to lower a string of pipe into the hole with a packer on it, so that they didn't have to remove all of that fluid, and then remove the fluid from the confined area by bailing or pumping.

By Mr. L. S. Lyon:

Q. That is what is described in this Cooper patent that you explained to the Court yesterday?

A. That is one thing that is described in it; yes.

Q. Do you have any actual, definite knowledge of the use of that Cooper patent anywhere? If so, when and to what extent? Do you know of your own knowledge of any such use?

A. If you will permit me to state that a man——

[fol. 437] Q. I don't care about your hearsay knowledge. Do you know of it being used?

A. No. I don't know that it was used in 1911; I wasn't in the industry at that time.

Q. Referring to the testimony you have given about what was in use prior to the disclosure of this Simmons patent in California, did you find the same situation to be true in Texas when you were down there in connection with that case?

A. Yes. I think that is a correct statement, that that was the general knowledge in the fields.

Q. As far as you know, the introduction of this method by Mr. Halliburton revolutionized the practice in the industry, is that correct?

A. I don't know how I could state that, as far as I know.

Q. Well, it may be true as far as you know?

A. Not knowing what the facts are actually, I couldn't say. All I could say is as far as I know anything may have been true on that subject because I wasn't familiar with the matter at that time.

Q. Then, your testimony that a man skilled in the art would have learned this thing from the Franklin patent, supplemented by this other publication material that you have brought in here, loses all force if in fact the industry didn't see or find that from those publications and that patent, isn't that correct?

A. My testimony was that a man skilled in the art could have learned it from the Franklin patent, and that is the rule which governs in connection with the prosecution of patent applications.

[fol. 438] Q. Would it make any difference in your opinion if in fact you knew that for fifty years nobody found in the Franklin patent and this other material the understanding of the Simmons method which you say would be apparent to them from it?

A. It wouldn't make any difference in my opinion because this is a patent and we are attempting to ascertain what the alleged inventor was charged with knowing at the time of this alleged invention.

Q. You testified regarding this Cox patent, Defendants' Exhibit H-13, before Judge Bryant, the patent there being Exhibit 25 in that case, did you not?

A. I did.

Q. Refer now to this patent to Cox, Exhibit H-13. That shows a two-string tester, does it not?

A. It shows what in this litigation has been referred to as a two-string tester, that being one string of pipe for obtaining the sample and another string of pipe for maintaining or establishing circulation.

Q. You are fully aware, are you not, that two-string testers are impractical and have not been successful in the industry?

A. I don't believe that I should answer that question. I have not qualified as an expert in the oil industry.

Q. Well, you might know that. I am not asking you to testify, if you don't know. But don't you know that fact?

A. No, I don't know that. I know that, just as is shown in Figure 2 of this three well exhibit, that they there put down two strings of pipe for various purposes.

[fol. 439] Q. That is the best answer you can give to the question?

A. I have got to answer within my own knowledge, yes.

Q. But, to your knowledge, has a two-string tester ever been operated commercially?

Mr. Boyken: If your Honor please, I object to that. Mr. Lyon objected to my questioning this witness regarding the commercial activities of these tools in the oil industry, and I think that question is improper.

The Court: Objection sustained.

Mr. L. S. Lyon: I am not asking him for the fact. I am asking him for his knowledge, and this witness has had charge of the search for the material to defend this case with for several years for this defendant. I would like to take an exception to the ruling. The witness testified on this point before Judge Bryant at page 724 of the record. He knew the answer then, and Judge Bryant allowed this very question.

The Court: There is nothing before the Court, Mr. Lyon.

Mr. L. S. Lyon: Your Honor ruled before I could present the authority for my question.

The Court: The correct procedure is to ask that the ruling be stricken out or withdrawn, and then you have an opportunity, but, if you have any intention of making any such request, I am not going to permit it. Go ahead.

Mr. L. S. Lyon: That is why I didn't make it. I would like an exception.

[fol. 440] The Court: Yes.

Mr. L. S. Lyon: And I would like to have the answer for the purpose of the record, under the rule that I referred to yesterday.

The Court: I think perhaps you are entitled to that, under the rule. I have examined the decision, and I am frankly of the opinion that the decision does not make the rule any plainer than it is. I think the rule itself is plain only to this extent, that the court is at liberty to allow the answer to be made or to give such explanation as will render the exact answer not necessary. That is clearly what the rule

says. You may have the answer in this case, but the answer is not evidence in the case.

Mr. L. S. Lyon: I will repeat the question, as I am reading it.

Q. To your knowledge, has a two-string tester ever been operated commercially?

A. I was advised, but to my personal knowledge—I think that is the way the question was asked in Texas—I was advised that a two-string tester was operated by Mr. Edwards, but I don't know that. I was told.

Q. But to your knowledge there has been no commercial operation of a two-string tester?

Mr. Boyken: I object to that, your Honor.

The Court: Say yes or no, and this will be deemed to be answered.

A. I don't know.

[fol. 441] (Cross-examination resumed, after an interruption to take the testimony of other witnesses.)

Q. Mr. Abbett, when your cross-examination was interrupted you had started to discuss the Cox patent. I believe you have already testified that the Cox device is a two-string device. The next question I wish to ask you is whether or not there is any teaching in the Cox patent of recovering an entrapped sample, and by an entrapped sample I mean a sample that has been received within the test string and a valve closed so that the sample is removed from the well by raising the pipe with the valve closed.

A. I consider from a study of the Cox patent that it does disclose the recovery of an entrapped sample.

Q. Does it so state?

A. Yes. He states that he provides a means for procuring and bringing to the surface a small quantity or sampling test of such oil, sand, water, or whatever is in the path of the drill bit as there is for inspection and analysis.

Q. Is there any valve in the device of the Cox patent which can be closed after the sample has been received to exclude the drilling fluid while the pipe is being raised out of the well?

A. The—

Q. If you will answer these questions yes or no, and then give your explanation if they require explanation, we will get along faster.

A. No. There is no valve which will exclude the drilling fluid from the sample chamber after a test has been taken, but there is a valve which entraps the sample and holds it [fol. 442] within the test chamber while it is being withdrawn from the well.

Q. But that valve will not exclude the drilling fluid while the pipe with the sample in the pipe is being withdrawn from the well, is that correct?

A. That is correct. You would have your entrapped sample at the top of the sample chamber and the pressure of the fluid within the well after the packer is lifted off of its seat as you withdraw would cause a column of drilling fluid to come under the entrapped sample and to be raised within the test chamber and there caught by the trap valve with the sample or test sample disposed above it within that chamber, and there would be two columns of fluid, the upper column being the sample and underneath it would be a column of the mud fluid, both being entrapped within the pipe.

Q. And, depending on circumstances, the extent to which that sample and the drilling fluid were mixed would be indeterminate, isn't that correct?

A. That is correct as I am advised, except that the different fluids that flow into the test chamber classify themselves normally in the order in which they go into the chamber. And due to the relatively small cross-section of the column they remain in substantially that classification as the tubing is withdrawn.

Q. Do you see any objection to allowing the drilling fluid to enter the test string after the sample has been taken and while the device is being removed from the well?

A. No. As far as getting what Cox said he wished to get was a sample of the fluid within the well, for any practice we know that with all of the test tools drilling fluid [fol. 443] does go into the sample chamber during the operation of taking a test.

Q. Then, you think there is no advantage in having a valve on the tester which will exclude the drilling fluid while the test is being removed from the well?

A. I wasn't asked that question but I will answer it. I think there is an advantage in having a valve for sealing the lower end of the test string.

Q. What is the advantage?

A. The advantage of that is that the quantity of material within the string will be identified as having completely entered the test string before the packer was raised from its seat.

Q. The only valve that exists in the Cox device after the sample has been taken and the device is being removed from the well is the check valve 15, isn't that correct?

A. Yes.

Q. And that check valve is operative to prevent fluid from flowing down the test tube 13 but not operative to prevent fluid from flowing into the test tube 15, is that correct?

A. Yes. It is a check valve which means that it will only obstruct the flow of fluid in one direction but the direction here provided is to entrap a sample.

Q. And, except at the top of the well, the superior pressure is imposed from without the tube 15 by the drilling fluid, isn't that right?

A. I don't understand the question, Mr. Lyon.

Q. The force exerted by the drilling fluid or the pressure of the drilling fluid tending to cause the drilling fluid to flow into the test tube 13 by the valve 15 is greater than the pressure exerted by the sample contained in the test tube [fol 444] 13 while the device is being removed from the well and except at the top of the well, is that correct?

A. Yes; unless the height of the column of fluid within the test string is greater than the height of the column of drilling fluid within the well at any particular time.

Q. Ordinarily, in taking a test, when you release the packer the pressure from the drilling fluid greatly overwhelms the pressure of the sample that is in the test string, isn't that correct?

A. Yes. But in this particular case we are dealing with two columns of fluid, one that has accumulated within the test string and one which is on the outside. And when the seal is broken by taking the packer off of its seat those two columns of fluid within and without will equalize and reach a common level.

Q. The valve 15 will not exclude the drilling fluid upon release of the packer in the form shown in the Cox patent, is that correct?

A. No; it will not exclude the drilling fluid but will entrap such fluid as is within the test string. And, as we break

that seal, the two columns of fluid become equal, and then as we raise the test string the inside column will have been entrapped and will have a constant head while we are gradually decreasing the head of the drilling fluid within the well.

Q. To make it simpler, when you release the packer in operating the Cox device drilling mud would flow into the test string 13 by the check valve 15, would it not?

A. Yes; beneath the column of sample.

[fol. 445] Q. This perforated pipe 7, or I guess perhaps the pipe is 8 and it terminates in the plunger 7, is intended to penetrate into the formation, is it not?

A. I would like to refer to the patent on that because something is stated on that point. It states that it is, after breaking the closure, plunged into the bottom of the hole. It being a hole, I assume that the hole is open.

Q. The only method described in the Cox patent is that the perforated pipe shall be projected into the formation, is that right?

A. Do you mean physically imbedded in the formation?

Q. It will penetrate into the formation?

A. My understanding of that was that there was a hole beneath the packer which was in the formation, and that after the packer had been seated this penetrating member went down into the area defined by a hole in the formation, but I didn't understand that you were going to plunge the perforated member into the dirt of the body because there would be the opportunity to clog those holes and no sample would be obtained.

Q. Does the Cox patent make any statement regarding any "rat-hole"?

A. No. He doesn't use that term.

Q. Is it your testimony now that this perforated plunger 7 or 8, illustrated in the Cox patent, is intended to be lowered or projected into a "rat-hole" rather than to be stuck into the formation?

A. The only statement I find is the one I read a moment ago, that, with such impact, the sharp pointed member 7 is forced downwardly, and on breaking the closure 13a is plunged into the bottom of the hole. If the bottom of the [fol. 446] hole is directly against the end of the packer, it would be plunged there but it is my understanding that the

bottom of the hole was the area of formation to be tested and was a length of hole below the packer.

Q. Then, you state that it is not correct that the only method described in the Cox patent is that this perforated plunger 7 or 8 shall be stuck right into the formation?

A. No. I didn't say that that was not correct. I said I didn't understand the patent to be that explicit.

Q. I will read from your testimony before Judge Bryant at page 974 of the record in the Texas case. You were asked the following questions, were you not:

"Q.—This Cox device is not adapted or intended to operate by this perforated pipe being projected into a drill chamber into which the fluid from the formation flows, is it? It is supposed to be stuck right into the formation or ground itself?

"A.—That is one method that is used; yes.

"Q.—That is the only method described, isn't it?

"A.—Yes; that is the only method."

Did you so testify?

A. I did. And I state now that that may be one of the methods. If you recall in that case, we went to trial there on a very short bit of notice, and since that time I have looked these patents over somewhat more carefully, and I would not commit myself to stating that the patent when it says that it is extended into the bottom of the hole is definite as to whether that means penetrated into the dirt of that hole or into the bottom of the hole.

[fol. 447] Q. Doesn't the Cox patent actually state on page 1, line 70, that the lower end is a sharp pointed plunger 7 for piercing the formation at the bottom of the hole?

A. Yes; it does.

Q. Do you want to change your testimony in view of that having been brought to your attention?

A. Yes. I will state this, that at that place in the description it states that the member 7 is pointed for piercing the formation at the bottom of the hole, but looking into the other statement it says that it was plunged into the bottom of the hole; and in referring to that my contention is that that doesn't necessarily mean the physical end wall of the hole.

Q. Is it your testimony now that you were not prepared

properly to explain these prior patents at the trial before Judge Bryant?

A. No; that is not my testimony. My testimony is that I had attempted to fully study these patents and to attempt to ascertain what was in them, and that the statements I made there were made in perfect sincerity and with no intention to mislead the court there or here.

Q. How long an opportunity did you have to review these patents from the time you first went to work on them before you actually testified before Judge Bryant?

A. Such patents as we had—

Q. Take the Cox and the Edwards and the Franklin and the Cooper patents. You fully commented on those patents in an affidavit filed in Judge Bryant's court in that case about a month before the trial commenced, did you not?

A. Yes; about 25 days before, I think it was.

[fol. 448] Q. And then you were present at the trial, and the trial lasted for several weeks before you took the stand, isn't that correct?

A. Yes. But these patents in the prior art were not discussed during that period.

Q. But you had all of that opportunity to look at them, didn't you?

A. I did.

Q. And how long before you prepared the affidavit that I referred to had you been studying these patents?

A. I think this art had been accumulated all told about a month.

Q. Before the affidavit was filed?

A. Yes. But we had no notice at that time of any trial and the affidavit was prepared on the way to Texas.

Q. Could you use this Cox apparatus as disclosed in the Cox patent for making a water test in casing?

A. There would have to be the addition of an anchor pipe in order to do that because in making a water shutoff test with a sleeve packer you must have some abutment below it against which you can press.

Q. This Cox tester requires two strings to be lowered into the well, Nos. 1 and 13, does it not?

A. To make a test?

Q. The apparatus as described here embodies two strings?

A. The apparatus shows two strings; yes; an outer string through which circulation of the drilling fluid may be obtained down through the string and out through the open

ings 4 and into the well, but that pipe does not concern itself with the taking of a sample.

[fol. 449] Q. There is no such pipe embodied in the Johnston tester, is there?

A. There is no such pipe but provisions for circulation have been made to obtain the emergency safety device by providing circulation.

Q. The Johnston device circulates through the tester, does it not?

A. Yes.

Q. The Cox device does not circulate through the tester, does it?

A. No; it doesn't. While the packer is seated it would circulate above the packer but, in the event the packer was drawn off its seat and there was a need for the fluid in the well, the fluid would flow down around the packer, beneath the packer, and serve the same purposes as the circulating valve in the Johnston device.

Q. As a matter of fact, the Cox apparatus includes this pipe No. 1 so that you can maintain circulation during the time that the packer is seated and the test is being received into the tube 13, does it not?

A. Yes.

Q. There is no such provision in the Johnston device, is there?

A. No; not for maintaining circulation while you are seated.

Q. Any circulation that you could have in the Johnston device would have to correspond to a circulation down the test tube 13 in the Cox patent, would it not?

A. Yes; that is, so far as drawing a distinction between circulation above the packer and through the packer. The Johnston device circulates through the packer and this circulates either above it or around it.

[fol. 450] Q. The Johnston device contains no provision for circulating and also at the same time recovering a test, isn't that right?

A. That is right.

Q. Whereas Cox does? That is also true, isn't it?

A. Yes. The circulation in Cox is entirely independent of any testing operation.

Q. Do you mean by independent that both can go on at the same time?

A. Both can go on at the same time or either could go on without the other.

Q. Cox doesn't make any reference to the latter, does he, in his patent, that is, doesn't disclose any teaching of eliminating one and using the other?

A. No. Cox intended that he should maintain circulation when his packer was seated.

Q. In your search and investigation of the prior art was any attempt made to determine whether this Cox device was ever successfully used commercially?

A. Yes; attempts were made, and the information obtained did not seem sufficiently satisfactory as proof to bring it into court.

Q. You can't find any satisfactory proof, or haven't been able to find any satisfactory proof to show that this Cox device is being used commercially in the oil fields?

Mr. Boyken: We object to that, your Honor. This witness has been limited in his direct examination to testifying as to the operation of these devices of the patents. We don't contend that he has any general knowledge of the oil fields. In fact Mr. Lyon objected to our asking him questions regarding the practical operation of these tools. I think, therefore, that it is not proper cross-examination to [fol. 451] ask him now whether any of these devices actually had any commercial activity in the oil fields.

Mr. L. S. Lyon: I am not asking him for his opinion as to whether this is practical or not. He testified that he had charge of the investigation to prepare any available defenses for this case, and he testified in regard to this patent and what could be done with it, he thinks, and I am asking him if, in the course of his investigation, he tried to find out whether this thing had ever been used commercially, or is being used. He says he tried to find out, and I want to show that they were unable to find any such thing. That has got nothing at all to do with asking him for his opinion about whether this is a practical device or not.

Mr. Boyken: His search was confined to a search in the patents and the literature, and not in the oil fields, to find out whether use was made of these devices. Furthermore, the matter is immaterial. It does not make any difference whether these devices of the earlier patents were ever used or not. We are using them merely as prior publications,

and it is utterly immaterial in this case whether Mr. Cox or anyone else ever made a device of this kind. I therefore object to it as not proper cross-examination, and, second, as immaterial.

The Court: To ask him if he has knowledge as to whether this device was used to any great extent, would not that of necessity require practical knowledge of what was going on in the oil fields? Otherwise it would be more or less hearsay evidence, it seems to me.

Mr. L. S. Lyon: Your Honor, he testified already that he had had charge of preparing this prior art defense, and that he has made an investigation. I haven't asked him how [fol. 452] good this thing was, if it was used. I have asked him if he could find out that it was ever being used or had ever been used at all. He said he investigated to find out.

The Court: Objection sustained.

Mr. L. S. Lyon: An exception.

Q. Now will you turn to the patent to Edwards?

The Court: What number is that?

Mr. L. S. Lyon: That is Defendants' Exhibit H-16, your Honor.

The Court: Do you have the number of the patent?

The Witness: No. 1,514,585.

The Court: That is the Edwards patent?

Mr. L. S. Lyon: Yes, your Honor.

By Mr. L. S. Lyon:

Q. This patent was cited and considered by the Patent Office examiners and the Board of Appeals on the grant of the Simmons patent, was it not?

A. Yes; it was considered by the Examiner on several occasions; quite a number of claims—

Q. I am not asking you to tell us what he did. The record speaks for itself.

A. I thought you asked me if the examiner considered it.

Q. This is the patent that was cited by the examiner, one of the patents that was cited by the examiner during the consideration of the Simmons application, was it?

A. Yes; and on the basis of which quite a few claims were cancelled.

[fol. 453] Q. And so also was the Cox patent, the Cooper patent and the Franklin patent; isn't that true?

A. The Franklin patent was never cited by the examiner during the prosecution of the Simmons case, as I recall. It came up on motion to dissolve.

Q. But it was considered by the Board of Appeals?

A. It was considered by the Board of Appeals on a motion to dissolve.

Q. And the Cooper and Cox patents were cited, considered by the Patent Office also?

A. Yes.

Q. This is the patent that suit that counsel has called the Court's attention to, decided by Judge Hutcheson, Edwards against the Johnston Formation Testing Company, was based on, isn't it?

A. Yes.

Q. And this patent was discussed by you before Judge Bryant, and was Exhibit 28 in that case; is that correct?

A. I don't recall the exhibit number. I discussed the patent.

Q. I believe you stated that if you had been asked to suggest what was the best thing to use for testing a well that existed in the known art immediately prior to the Simmons invention, say the question had been asked you in 1924, that you would select this Edwards patent; is that correct?

A. That is.

The Court: The Edwards patent?

Mr. L. S. Lyon: Yes, this Edwards patent.

By Mr. L. B. Lyon:

Q. This Edwards patent discloses recovering the natural fluids from a formation to be tested solely by their flowing [fol. 454] through the test tube to the top of the well or by pumping them out, and makes no reference to entrapping a sample in the bottom of the test string and lifting the entrapped sample out to examine it; is that correct?

A. It makes no reference—

Q. Can't you answer that yes or no?

A. I can't answer it yes or no.

Q. Give us the best answer you can.

A. It makes no reference to definitely entrapping the sample. But there is a disclaimer over on page 3 that Mr. Edwards made after the patent had issued.

Q. Well, that—

Mr. Boyken: Just a minute, please.

Mr. L. S. Lyon: I object to the disclaimer. That was filed in April, 1932, your Honor, and is a self-serving declaration by Mr. Edwards. It wasn't part of the disclosure of this patent as it existed prior to the Simmons invention.

Mr. Boyken: The disclaimer becomes a part of the patent, your Honor. It is just as much self-serving as the application itself.

Mr. L. S. Lyon: You can't contend that a disclaimer filed in 1932 was part of the published information in this patent prior to 1926.

The Court: Let the witness answer the question.

A. The disclaimer states——

Mr. L. S. Lyon: I object to the reference to the disclaimer, as not part of the patent as it existed in the prior art, your Honor.

The Court: Objection overruled.

Mr. L. S. Lyon: An exception.

[fol. 455] A. The disclaimer states that Charles R. Edwards hereby enters this disclaimer, as follows: "He, said patentee, disclaims any interpretation of any of the claims 1 to 6, inclusive, in the patent, which does not restrict said claims to a device that is capable of closing the test stem to the entrance of fluid from the bore beneath the packer by motion of the stem while the packer is set." And in view of that statement I contend——

By Mr. L. S. Lyon:

Q. I would like to ask the witness to answer my question, which excludes this disclaimer. I think on cross-examination I have a right to ask my own questions.

The Court: Is this the question that he said he couldn't answer?

Mr. L. S. Lyon: He said he couldn't answer it yes or no.

The Court: You mean this is the question that he said he was not able to answer yes or no?

My. Boyken: Yes, your Honor.

The Court: Now he is making his explanation. So go ahead and finish up.

The Witness: Will you please read the——

The Court: You had just read the disclaimer.

The Witness: Yes.

The Court: Now go on from there.

A. And Mr. Lyon asked me, as I recall, whether or not there was anything shown in this patent that would indicate that you could entrap a sample and take it out, and I said that the statement of the explanation in the disclaimer indicated that they intended to close the test stem to the entrance of fluid from the bore beneath the packer by motion of the stem while the packer is set. And he also discussed in the [fol. 456] Edwards patent that the test stem you can withdraw from the structure, and therefore it is my contention that the Edwards patent shows that they intended to entrap a sample by manipulation of the test string while the packer was set, and to withdraw that test string from the well with such entrapped material as was within it.

Q. That disclaimer was not filed until April 5, 1932, was it?

A. March 8, 1932.

Q. Is there any statement in the patent as it existed prior to the filing of the application by Simmons to cover his invention, wherein Edwards specifies that he is going to recover an entrapped sample?

A. No. And then the last paragraph—the Edwards patent is a very short patent, and the explanation is very sketchy—but in the last paragraph on page 1 he says: "To withdraw the apparatus the packer is first released before stopping the slush pump and the test stem is then withdrawn before withdrawing the drill pipe and packer." And why withdraw the test string from the well? I don't know of any other reason that he withdrew it than to remove such material as it contained.

Q. The whole idea in this Edwards patent is flowing out through the tube, isn't that correct?

A. The—

Q. Just answer that yes or no, if you can, and if you can't answer it yes or no, I will ask you, if I want you to give some other answer.

A. No, I don't contend it is.

Q. I call your attention to your testimony before Judge Bryant, at page 719 of the Texas record, and ask you if you [fol. 457] testified as follows with reference to the Edwards patent:

"Q. —The whole idea is flowing it out through the tube?"

"A. —That is the whole disclosure, as far as description goes, yes, sir."

Did you so testify?

A. I so testified, and I expected you to ask that question. This disclaimer was something that I had not read then.

Q. I will ask that, in answering my questions on cross-examination from now on, that you disregard anything that is contained in that disclaimer and keep only to what the patent stated as it was printed and existed prior to the application for the Simmons patent. With that in mind, what is your answer?

A. With that in mind, my answer would be that Edwards discloses flowing or pumping.

Q. And does not disclose lifting an entrapped sample out?

A. If I must disregard the disclaimer and the last paragraph.

Q. Never mind. You can consider the last paragraph, but disregard the disclaimer. What is your answer?

A. My answer is as I gave it in Texas, that it was either by flowing by the pressure of the well or by pumping.

Q. Referring to pumping the sample out of the well or the test tube, if it didn't flow itself to the top of the well, what did Mr. Edwards have in mind, do you know, or can you tell us from this patent?

A. Yes. He states that if the pressure of the oil or other fluid should not be great, the pump in the working barrel can [fol. 453] be started and the fluid forced out through the stem 8, thus completely testing the stratum under investigation.

Q. In order to do that, if you were working on, say, a wild-cat well, and wanted to make a test, where you couldn't get a flow to the top of the well, you would have to bring pumping equipment out to the well, would you not?

A. You would unless you entrapped a sample.

Q. The only way he tells you to do it is to pump it out; that is correct, isn't it?

A. In that paragraph: But in this disclaimer:—

Mr. L. S. Lyon: Never mind. I will ask the court to instruct the witness, for my cross-examination, to disregard the disclaimer.

The Court: Yes.

The Witness: Very well.

By Mr. L. S. Lyon:

Q. I believe you testified before Judge Bryant, but I have forgotten the figures. How much do you think it would cost to take out equipment to a wildcat well so that you could pump out one of these samples, if it didn't flow to the top of the well?

A. Well, if you took a complete pumping equipment out there it would cost considerable.

Q. How much?

A. I don't think I would know the price.

Q. I think you testified something about it. Would \$2500 be a fair estimate of what it would cost to get pumping equipment out to a well to pump out the sample?

A. It might be, if you couldn't use the equipment you have at the well, the sucker rods.

[fol. 459] Q. Well, you know very well that you don't have sucker rods on a wildcat well while it is being drilled, don't you?

A. No, you wouldn't.

Q. You wouldn't have any equipment that you could pump the well with before you had found production, would you, ordinarily?

A. No, not ordinarily. You have bailing equipment.

The Court: Do you indicate that \$2500 is a reasonable sum? If not, what would you indicate as a reasonable sum?

A. I should indicate that as a reasonable sum.

By Mr. L. S. Lyon:

Q. And the price charged by Johnston for making one of the tests with his tool is only \$300, isn't it?

A. Approximately.

Q. This Edwards device is also a two-string tester, is it not?

A. Yes, that is, carrying the same distinction we did before, that the outer string of pipe is for maintaining circulation when the packer is set, and that the inner string is the tube within which the sample material, and through which the sample material, is entrapped.

The Court: What is the necessity for maintaining the circulation?

A. The necessity was, when this packer was set in the hole, they were afraid that debris would fall in around

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the top of it, causing it to stick, and for that reason they circulated fluid down through those openings 10, and up within the hole, and carried out such debris, as an insurance against the sticking of the pipe after it had been set. [fol. 460] The Court: Well, would that fluid fill the hole all the way up?

A. Yes. It fills it all the way up and circulates, and then they bring it down again, the same as they do with drilling. It overflows the top.

The Court: What was the necessity of having the outer tube, if the hole was filled with fluid anyhow?

A. They thought the necessity for having the outer tube was as a precautionary measure to prevent any crumbling of the wall down over the packer, that that circulation fluid would carry that material up and out of the well and not let it accumulate to such an extent as to stick the packer in the hole.

Q. Now referring to this Edwards patent, the tube that the fluid flows through from the formation is No. 8, is it not?

A. Yes.

Q. That constitutes the test tube?

A. That is the test tube.

Q. And the outer pipe that is used for maintaining circulation is No. 1; is that correct?

A. Yes.

Q. Now, while the device is being lowered into the well tube 8 at its lower end, that is, the perforated end, is pulled up and screwed into a nipple, No. 7; is that correct?

A. Either that or the sleeve or the nipple No. 7 is shoved down to the end and screwed on before the pipe is inserted into the well.

[fol. 461] Q. Do you understand that they lower these two strings 8 and 1 simultaneously or separately in putting this Edwards apparatus into the well?

A. According to Mr. Edwards, they lower them separately.

Q. That is what the patent says?

A. That is what the patent says.

Q. Which one is put in first?

A. The pipe 1 with the packer.

Q. And then the test tube 8 was put into the well, and it carried this nipple No. 7?

A. It carried the nipple No. 7, which acted as a sleeve to co-operate with the perforated end of the pipe 8 in form-

ing a valve, and also had a tapered shoulder which sat at the member 4, to form a seal-off at that point between the fluid above the packer and the formation below.

Q. When they got to the bottom of the well how would they open this test string at the bottom so that fluid could flow into these perforations?

A. The sleeve 7 was forced downwardly on the tapered seat 6, and that would frictionally hold the sleeve so that the pipe 8 could be rotated to unscrew the threads.

The Court: Wait a moment. I want to find these.

The Witness: 8 is the central tube. So that the pipe 8 could be rotated to unscrew the threaded connection between that head portion at its lower end and the sleeve 7, after which the pipe 8 was lowered, as shown in Figure 2, to project the perforated section of the pipe 8 into the area to be tested.

[fol. 462] Q. What does the Edwards patent state or describe as to in what order these things should be done to get this stuff out of the well?

A. The last paragraph, I believe, describes that.

Q. Is that the only description?

A. If there is any other description I would be pleased to admit it, if you would point it out. But that states that to withdraw the apparatus the packer is first released before stopping the slush pump and the test stem is then withdrawn before withdrawing the drill pipe and packer.

Q. You release this packer before you start withdrawing the test string?

A. Before you start withdrawing the test string.

Q. Then you would release the packer while these perforations were still exposed to the fluid in the well?

A. There is nothing in the patent that says that.

Q. Does it say the contrary?

A. If I am permitted to look at the disclaimer—

Q. Never mind the disclaimer.

A. No, it doesn't say anything to the contrary.

Q. How about this statement in the last paragraph of the patent, lines 105 to 110, which says: "To withdraw the apparatus the packer is first released before stopping the slush pump and the test stem is then withdrawn before withdrawing the drill pipe and packer"? Isn't that a clear statement that you don't begin withdrawing the test stem until after you have released the packer?

A. That wasn't what you asked me.

[fol. 463] Q. Well, I will ask you that now.

A. Yes. That is what I said before. But you asked me if there was anything there to indicate whether or not that test stem was closed.

Q. The only way you can close that test stem is by elevating on it from the top of the well; is that right?

A. It doesn't say withdrawing it from the packer.

Q. The only way you could close those perforations, if they could be closed at all, would be by pulling up on the test string; isn't that right?

A. Pulling up on the test string while the sleeve remains stationary within the packer.

The Court: Is the sleeve fixed to No. 1?

A. No. The sleeve is fixed to No. 8, and is frictionally held in the portion indicated at 4, the body member that is mounted on the—

By Mr. L. S. Lyon:

Q. You can't lift up on that string 8 except by pulling on it from the top of the well, can you?

A. No.

Q. And you can't cover up those holes in the bottom of string 8 except by lifting up on string 8 from the top of the well, can you?

A. No.

Q. Is there any statement in the Edwards patent that that is done before the packer is released?

The Court: That what is done?

By Mr. L. S. Lyon:

Q. That you lift up on this string 8 to close those holes before you release the packer?

A. No.

The Court: The contrary is so, is it not?

[fol. 464] Mr. L. S. Lyon: I think so, but he doesn't seem to think so.

The Court: "To withdraw the apparatus the packer is first released before stopping the slush pump and the test stem is then withdrawn."

The Witness: His sentence is, "To withdraw the appa-

ratus from the well." The first thing he withdraws is his test string from the well.

The Court: Very well.

By Mr. L. S. Lyon:

Q. In order to prevent the mud fluid from flowing into the test string 8 while the test string 8 is being pulled out of the well, it would be necessary to seal off or cover up these perforations tight enough so that mud fluid under pressure couldn't get into them; isn't that right?

A. That is correct.

Q. Does this Edwards patent state how to do that?

A. No, not if I am confined solely to the patent and am to ignore the disclaimer.

Q. It would be necessary, at least, to pull the pipe upward through the nipple 7 until the nipple covered the holes, would it not?

A. It would be——

Q. Is there any statement in the Edwards patent to the effect that you can pull this test string 8 up so that the perforations are covered by the nipple 7 on going out of the hole?

A. No, not in the patent specification as the patent was issued.

Q. The nipple 7 is not in any way tied or connected to the part 6 in which it is seated, is it?

A. No. It is just frictionally seated there and holds.

[fol. 463] Q. You mean it is just resting in it?

A. It is more than resting in it. If it was just resting there rotation of the tube 8 would produce rotation of it. It must be in there with sufficient force to be held against rotation when you screw or unscrew.

Q. But that is the only force? It is just set down in there?

A. Yes, it is set down in there; but your attention is called to the fact that there is a shoulder on the pipe 8 just above it, so that you can get some pressure on it to forcibly seat it.

Q. Is there any statement in the patent that when you lift up on the string 8 that nipple 7 won't come out along with the pipe 8 rather than remain in the seat 6 until you can pull the perforations up into the nipple 7?

A. No, there is no statement in the patent, ignoring the disclaimer.

Q. Would pulling these perforations up into the nipple 7 seal them off tight enough to prevent the mud fluid from

penetrating under pressure, or would it be necessary, if you know, to be able to screw this end of the string 8 back into the threads of the nipple 7?

A. I can answer that in two ways, one that I think the patent shows and one that Mr. Edwards told me.

Q. I don't care anything about what Mr. Edwards told you. That is not competent.

A. From a study of the patent it was my conclusion that it was intended to screw that pipe in at the lower end in order to seal it off.

Q. You know that cannot be done, don't you?

A. No; I don't.

[fol. 466] Q. In order to get that pipe to screw back into that nipple you would have to pull up on it from the top of the well, wouldn't you?

A. To some extent, but then you are working a thread into a sleeve.

Q. And that thread on the bottom of the pipe 8 is covered with fluid or mud because the packer has been released, hasn't it?

A. It might be.

Q. And you would have to lift up on the pipe and put some strain on the pipe in order to get that thread to start back in and screw up into the nipple, wouldn't you?

A. That would be pure speculation on my part.

The Court: My Lyon, what is the importance of that if the patent does not require that the end be screwed back where it was to begin with?

Mr. L. S. Lyon: I am bringing out, your Honor, and the Patent Office has held, that not only did Edwards have no idea of recovering an entrapped sample with this device, as evidenced by his reference to pumping, but that, as a matter of fact, he couldn't have unscrewed one with this device because, after you once unscrew this thing and open up those holes, you couldn't get it back into the nipple 7 tight enough to keep drilling fluid out because this nipple 7 would pull off of its seat and the whole thing would go up out of the well. You couldn't get enough strain on it to do it without unseating the nipple 7. That is what has been held.

The Court: As the pipe that precedes the sample is being lowered, it is in the position shown in Figure 1, isn't it?

Mr. L. S. Lyon: That is right.

[fol. 467] The Court: Then, they have to unscrew it?

Mr. L. S. Lyon: Yes, and let it down.

The Court: And lower, it still further, having unscrewed it?

Mr. L. S. Lyon: Into the position shown in Figure 2.

The Court: That is, into the chamber area where they get the matter to be tested?

Mr. L. S. Lyon: That is right. Now, the question is, your Honor, could Edwards have taken an entrapped sample with this device. He has got to be able to close it at the bottom in order to take it out. He doesn't say that he can and he doesn't say that he wants to. And we say that he couldn't have if he had thought of Simmons' idea; that, if he had thought of the same thing that occurred to Simmons, still, he couldn't have done it with this device.

The Court: By withdrawing that, drawing it up into the sleeve 7 again, the same as it was before, and taking it out, and if in that position the fluid from the pipe couldn't contaminate it, then he could—

Mr. L. S. Lyon: The point is he couldn't get it up there because he has got to work this thing from the top of the well and he has got to pull this pipe up without this nipple 7 coming up. It has got to stay there in its seat, and it is only resting there on that seat. And we say that he couldn't get that pipe to come up through that nipple; that the nipple would come right up with the pipe.

The Court: Why couldn't he?

Mr. L. S. Lyon: Because there would be mud and all the rest of it on the bottom end of this pipe. There is nothing to hold the nipple 7 down in that seat; and when you pull up [fol. 468] from the top of the well you are not going to be able to pull this into the nipple 7.

The Court: Do you mean the enlarged part at the lower end?

Mr. L. S. Lyon: Yes.. You can't pull it up so you can close these perforations.

The Court: Do you mean you cannot pull it through because that lower part is larger than the nipple 7?

Mr. L. S. Lyon: No. I mean when you pull on this thing from the top of the well—

The Court: That being No. 8?

Mr. L. S. Lyon: No. 8—in order to close this thing you would have to be able to pull this pipe up without this part 7 moving up. That would have to stay there until the pipe had pulled up to a point where it is shown in Figure 1.

The Court: And the pipe in the position that it is in Figure 1—

Mr. L. S. Lyon: We say you can't get it in there after it has once been opened. But, if you got it in that position, you shut it off all right if you get it screwed back in there.

The Court: Then, you would pull it up with the sleeve, too?

Mr. L. S. Lyon: Yes. But, in order to get it there, you have got to be able to pull this pipe up and screw it back without that sleeve 7 moving up. That is the point that I am making and the witness, I believe, has stated that he doesn't know what would happen.

A. No.

[fol. 469] Q. The patent doesn't state what would happen, does it?

A. No, if you ignore that disclaimer.

Q. You have referred to the fact that both Edwards and Cox thought it was necessary to have this second string of pipe to maintain this circulation while the packer was set. One advantage of the Johnston tool and of the Simmons tool is that your test string can be your regular drill pipe, isn't that correct; that you can use your regular drill pipe in a well for your test string because there is plenty of room for the drill pipe to go down the hole because that is the pipe that the well is being drilled with?

A. Yes; that is true, although I am not competent to say as to the selection of the drill pipe to the exclusion of any other pipe.

The Court: The question is is that one of the advantages of the Simmons and Johnston devices. Is it or isn't it?

A. I don't know.

By Mr. L. S. Lyon:

Q. But you know it is the practice to use the regular drilling pipe as the test string in both the Johnston and the Halliburton testers, don't you?

A. Yes.

Q. With the Edwards and the Cox devices you have got two different sized pipes to put into the same well. What sizes would they have to be? Do you know?

A. No. I wouldn't know.

Q. Ordinarily, the wells already have casing in them, do they not?

A. Yes; ordinarily.

[fol. 470] Q. There is some limit to the amount of room there is between a drill pipe and a casing in one of those wells, is there not?

A. Yes; there is some limit. But you are inquiring as to matters that are beyond my qualifications.

Q. You wouldn't know, then, if you had to run the Edwards or the Cox device, what kind of pipes to use so that you could have both the outer pipes which you have called for and the inner pipes, is that correct?

A. As I recall, either one or two of those patents says they use drill pipe.

Q. For which pipe? The outside or the inside?

A. Edwards says the numeral 1 refers to a pipe, usually ordinary drill stem, which is let down into the bore as drilling progresses.

Q. Then, the test tube in both the Edwards and the Cox devices would have to be a very much smaller pipe than the pipe which is used as the test tube in the Johnston and Simmons devices, isn't that correct?

A. It would have to be a pipe that would fit within a drill pipe.

Q. You have stated, Mr. Abbett, that the outer pipe in the Edwards and Cox patents would be drill pipe?

A. Edwards says that the outer pipe is a drill pipe.

Q. And Cox doesn't say?

A. I want to look at that patent again.

Q. If he does say it, we can find it ourselves.

A. Yes. It states that "1 denotes a section of drill stem with the usual couplings."

Q. Then, in both cases the outer pipe is a drill pipe, that is, in Edwards and Cox?

A. It is a drill pipe.

[fol. 471] Q. How big a hole is there through a drill pipe? Do you know?

A. No. I wouldn't know those dimensions.

Q. Do you know approximately how big it is?

A. No. I have never measured to find out.

Q. You know that these inner pipes would have to be very small, don't you?

A. The only thing I can say with any certainty is it would have to be small enough to go within the opening of the drill pipe. I have seen drill pipe but I have never had any occasion to measure the size.

Q. Then, as far as you know, it would be necessary to manufacture a special string of this smaller pipe to run through the drill pipe to operate the Edwards or the Cox testers, is that correct?

A. No; I don't know that it would be necessary to manufacture a special string. It would have to be made separately from the drill string but——

Q. Do you know of any?

Mr. Boyken: Let him finish his answer.

Mr. L. S. Lyon: He is not answering my question. He says he doesn't know and then he argues about it.

The Court: There is nothing before the court. Proceed with the questions.

By Mr. L. S. Lyon:

Q. You don't know of any pipe being used in oil wells and being present in oil wells of a small enough size to stick down drill pipe to the bottom of the well, do you?

A. I know of pipe that is small enough to stick down drill pipe.

Q. Will you refer to the Cooper patent——

The Court: What number is that?

[fol. 472] Mr. L. S. Lyon: That is Defendants' Exhibit No. H-12 and is patent No. 1,000,583 to A. S. Cooper.

Q. You explained this patent to Judge Bryant in your testimony in the Texas case, and in that case it was Exhibit No. 24, is that correct?

A. I explained it to him.

Q. Well, how many pipes and how many rods are embodied in this Cooper device that Cooper had to put down the hole and get out of the hole?

A. We have one pipe, which is No. 2, and on which is carried a packer——

The Court: It is numbered what?

A. 2, and on which is carried the packer 3. That packer is an inflatable packer and there is a pipe which conducts liquid into the packer.

By Mr. L. S. Lyon:

Q. What pipe is that?

A. Pipe 8. Then associated with the packer at the lower end of the structure are rods that slide and are operated by

the two ropes 11 and 20, ropes or cables, from the top of the well to control the packer valve 13 or to control the valve at the bottom of the test string 2 as generally indicated at 25. There is one main pipe, a small pipe 8, which is associated with the packer, and then the rods which are connected with the operating strings 11 and 20 and are mounted on the structure at the lower end of the pipe 2.

Q. Then, to operate this Cooper device you would have to put down a well a pipe corresponding to No. 2?

The Court: Wait a minute, Mr. Lyon, until I find that.

Mr. L. S. Lyon: No. 2 is at the top of Figure 1 on the righthand side.

[fol. 473] The Court: Does that represent the pipe?

Mr. L. S. Lyon: No. 2 has a lead line that runs over to the pipe, I think, at the top of Figure 1, right at the right of the pipe.

The Court: Figure 2 appears in three places but I am not able to tell just what it means. The lower one down towards the bottom would indicate a pipe at that point, would it?

Mr. L. S. Lyon: It refers to the same pipe in all three places. Doesn't it?

A. The numeral 2 refers to the same pipe in all three places. They have the numeral 2 there and a 2 here. In other words, that is continuous pipe the entire structure.

By Mr. L. S. Lyon:

Q. What are these things down here, Nos. 19 and 14?

A. Those are part of the packer and valve assembly which is on the lower end of this pipe 2 and, specifically, 19 is a member slideably vertically to operate the valve 25, and 14 is a member associated with the packer to control the relief of fluid from the packer when desired.

Q. Let's see. You have got the pipe 2, the packer 3 and this feed pipe No. 8—

A. That is the only other pipe on it and it is part of the packer assembly. It runs clear to the top of the well and comes down and brings fluid for the inflatable packer.

Q. And, also, you have got these rods 10 and 19. How far do they run?

A. They run to such a point as you see. They don't run clear to the top of the well. The cables 11 and 20 extend to the top of the well.

[fol. 474] Q. Then, you have two pipes and two ropes running from the packer to the top of the well in this device, is that right?

A. Yes.

Q. What is this No. 36 over here?

A. That is another form of the invention when you want to pump material from below here. That is a structure which has even been shown in those old Three Well patents, where you lower a pumping structure down and can take it out or put it in at will.

Q. Isn't Figure 2 supposed to be used in Figure 1? It is not a different form, is it, from Figure 1? It is just another part shown there, isn't it?

A. As far as the main structure is concerned it is substantially the same but this says Figure 2 is a string or line of pipe extending down in the well—well, I was looking at the wrong place. Figure 2 is a detail showing a hole or opening in the flow pipe, which hole communicates with the well above the packer. It also shows a pump let into the flow pipe. It doesn't say it is always let into the flow pipe.

Q. It doesn't say that it sometimes isn't, does it? Is there any statement in this Cooper patent anywhere that you lower this stuff that is shown in Figure 1 into the well and use it without having the stuff shown in Figure 2?

A. Yes; I think so.

Q. Will you point it out?

A. It states over on page 2 that they can remove the fluid from the pipe 2 by bailing.

Q. Does this Cooper patent describe anywhere recovering an entrapped sample to be lifted out of the well for [fol. 475] examination by hoisting the pipe with the sample therein by a valve?

A. No; it does not state that, although the entire structure can be used for that purpose, the valve at the bottom being opened and closed by one of the cords at the top of the well.

Q. How do you know it can be used for that purpose? Did you ever try it?

A. No. But anybody would know, if you had a pipe and a valve on the lower end of it and opened it, that, if you closed it, you could withdraw the fluid entrapped within the pipe by the closing of the valve.

Q. What do they have to have the pump for, then, if they are going to pull out an entrapped sample?

A. It states here that in certain cases, when they want to thoroughly extract the fluid in the well, they use that pump. I didn't say in answer to your last question that the patent said that you entrap the sample. I said this structure was capable of entrapping it.

Q. And to do that you would have to use all of these ropes and the rods and this packer as well as the pipe, wouldn't you?

A. If you used that type of packer.

Q. Actually Cooper discloses only getting a sample from the formation by either bailing it out or by pumping it out, isn't that correct?

A. Yes; if I may define the term "bailing" and "pumping" by saying that he opens the valve at the bottom of the pipe 2 after he sets his packer to seal off an area, and that then, with that material in there, he either lowers a bailer through it or pumps it to draw that material out to get his sample.

[fol. 476] By the Court:

Q. Do you mean that he doesn't get it by lifting the pipe up?

A. He doesn't describe getting it by lifting the pipe up. And that is what I say, that this valve when closed would entrap such material as was in there and would be withdrawn with it.

Q. Is the pipe empty up to the time the valve is opened?

A. Yes; the pipe is empty.

By Mr. L. S. Lyon:

Q. What about the hole 31?

A. That hole 31 is one that shows one form of structure which we have given some consideration. In this particular form here, Fig. 3, it is shown with a check valve on it.

Q. If it hasn't got any valve in this hole 31, how could your answer to the Court's question be correct about this being an empty pipe?

A. He has shown here a structure used in pumping, and that hole may or may not have been used there. It is used here with a check valve.

Q. What is he showing in Figure 1?

A. He is showing a check valve. Referring to your question relative to Fig. 1, 31 is a lead line leading rather ob-

securely to this side of the pipe and 32 is the check valve shown in it, and with that type of device he can entrap a sample.

Q. You say that is a check valve. Does it keep fluid from going out of the pipe or into the pipe?

A. He says he can use it either way, either to have a check of the fluid by which he keeps the fluid from coming out of the pipe, or he can reverse it so as to have it go into the pipe. [fol. 477] Q. If he did that, then, he couldn't keep his pipe dry, could he?

A. He could keep his pipe dry if he had it so that the fluid would not go into the pipe.

Q. If he had it the other way, it would not?

A. No. But he shows a structure that is capable of maintaining the sample.

Q. If you had a check valve, the fluid from outside of the pipe would come in or the sample from inside of the pipe could go out, couldn't it, one or the other?

A. One or the other. But we have that same sort of a check valve for a circulating valve on the Johnston device right now and it only goes one way.

Q. You say it could go one way or the other?

A. No. It can go one way. A check valve doesn't permit fluid to go both ways.

By the Court:

Q. In any event, a check valve means that the valve is closed, doesn't it?

A. In one direction.

Q. Only in one direction? Then, when it has fluid on both sides, the fluid will go from one side to the other, will it not?

A. In the direction in which it is permitted to flow but not in the other direction.

By Mr. L. S. Lyon:

Q. The check valve in the Johnston device that you refer to is below the main valve, isn't it?

A. Yes. But it effects the passageway right through the main valve.

Q. That is what you called the circulating valve?

A. Yes. The fluid pressure is on the outside.

[fol. 478] Q. Have you decided how you would get all of this stuff that is shown in the Cooper patent down a well?

A. Do I have to decide that?

Q. Well, have you? If you haven't, why all right.

A. He states that he lowers that assembly down on the pipe to its position.

Q. You said down in Texas you didn't know how you would get it down a well. Do you know now?

A. I made the answer I am making right now, that he stated down there that he lowered that assembly down in the pipe to that position.

Q. The whole business at once, do you think?

A. That packer assembly, I gather.

Q. Do you think he lowered the stuff with the pipe or do you think he put the pipe down and then this packer down the pipe?

A. No. I think that entire assembly, as shown there in Figure 1, must have been lowered as a unit on the lower end of the pipe.

Q. Do you find any statement to that effect in the Cooper patent?

A. I thought so.

Q. Well, point it out if you can find it. As a matter of fact, that packer is not carried on the pipe at all? It is carried on those rods that are controlled by those ropes, isn't that correct?

A. It is mounted on sleeves there; yes.

Q. Just answer the question. It is not carried on the pipe? It is carried on those rods, isn't it?

A. Well, I can't answer the question that way.

Q. Is it carried on the pipe or is it carried on the rods?

A. It is mounted on the pipe.

[fol. 479] Q. Where do you find that statement in the patent?

A. You can see that from looking at Figure 1, that it is mounted on the pipe.

Q. It looks to me like it was mounted on the rods.

A. The rods are connected with it, I will admit, but it certainly is on the pipe.

Q. Is there any connection between the rods and the pipe? Look at line 25, page 2, Mr. Abbett.

A. That is the part I was trying to find.

Q. It says that the packer is lowered into the well by the rod 10, doesn't it?

A. It does.

Q. Not by the pipe?

A. No; I didn't say it was lowered by the pipe. I said that structure was mounted on the pipe and the pipe extends through it.

Q. I am talking about when it is being put into the well. Do you stick this packer onto the pipe and hold onto the pipe to lower the packer or do you lower the packer by operation of lowering the rod 10?

A. It is supported by the rod 10 as it is lowered.

Q. Then, how are you going to do that, do you know, in an oil well?

A. I think that that entire structure is strung over the pipe 2 and supported by the rod 10 and progressively lowered into the well as the pipe 2 is assembled and lowered.

Q. Could there be any mud fluid in this well that Cooper intended to use this device on?

A. There might be.

Q. Is this a drilling well that he is referring to?

A. Yes; I think it is.

[fol. 480] Q. Does he say so? If so, where? He calls it a device for operating a well, not for drilling one, doesn't he?

A. He also says the structure is to be used in testing for the presence of oil, gas and water. And I, therefore, assume the well wasn't finished.

Q. Does he say it wasn't finished?

A. He doesn't show it finished.

Q. Does he say there was any drilling mud in this well anywhere in the patent?

A. No; he doesn't say that there is drilling mud in the well.

Q. What does he say he is running this in for? What is he trying to find?

A. He says, on page 2, line 119, "By this method of procedure a well can be tested for the presence of oil or gas, by pumping, which could not be done if a flood of surface water were entering the well which the pump or bailer was incapable of removing."

Q. Do you understand that that means that while the well is being drilled he is trying to find out what natural fluids have been exposed in the drilling of the well?

A. That is what I understand from the term "tested."

Q. You don't know that the term "tested" can be used for any other purpose in the oil well drilling art?

A. None other than to obtain a test.

Q. In the kind of a test that you have referred to, that is, a test made when you are drilling an oil well, if you want to find out what natural fluids you may have opened up but which are concealed by the pressure of the drilling [fol. 481] mud, is that the only use of the term "test" in the oil drilling art that you know of?

A. Why, no. A test applies to anything a person might do. But this man says he is testing for the presence of oil or gas.

Q. Doesn't he say in line 46 what he means by that, on page 2, "I will now describe the uses of the device. There is, what I may term, continual warfare between natural gas and the liquids (oil and water) for the possession of a well"? He is not talking about any problem of trying to detect what natural fluids he has encountered or opened up in drilling a well, that are being shut off by pressure of the rotary mud? He is talking about something else there, isn't he?

A. No; he is not.

Q. Well, read what he says. He is not talking about drilling mud preventing his knowing what these fluids are, is he?

A. No. But he says there are water courses and water in that well and there is oil and gas, and they are continuously in warfare, and he wants to shut off the water from those other materials which are at the bottom of the well so that they will not be influenced or overcome by his water pressure or liquid pressure.

Q. Isn't it clear from his patent that he puts this device down a well that he knows will produce oil and gas?

A. No; it is not clear to me because he says that he can use this device to test for the presence of oil and gas.

Q. What does this statement mean in line 57, "They will stifle or drown out the gas and no more can be had, and the well, if then operated for oil, will be ultimately exhausted, [fol. 482] leaving the water in possession"? What does that mean?

A. It means just what it says there, that those superior pressures of other liquids in the well might choke or drown the oil or gas so that, if then operated for oil, the well will be ultimately exhausted. It doesn't say they were going to but, if it was then operated, it would be ultimately exhausted. As a matter of fact, from the personal contact I have had—

Q. Will you point to any statement in the Cooper patent to the effect that he is going to use his device for testing purposes during the drilling of an oil well to find out if he has uncovered any oil or gas or water that is being held back by the pressure of the mud fluid?

A. Does the qualification "mud fluid" have to go into that answer?

Q. Drilling fluid; yes.

A. No; he doesn't limit it to any kind—

Q. I didn't ask you that. He does not disclose doing that, does he?

A. He says this device is for the purpose of testing a well for oil or gas.

Q. All right. Point to the statement where he tells you that you can use this apparatus during the drilling of a well to get samples of fluids that have been uncovered by the drilling of the well but which are concealed from him at the top of the well by the pressure of the mud fluid.

A. There is no mention of mud fluid. But your question is compound. You are putting a number of factors in it and all I can do is to stand on his own statement. As I said before, he says, "By this method of procedure a well can be [fol. 483] tested for the presence of oil or gas." Whether he is drilling a well or not, he says he is testing it to find whether that material is there.

Q. Where is the statement that you have just quoted from?

A. That is on page 2 at line 115.

Q. In line 115 it says that the way you can make that test is by pumping, isn't that correct?

A. Yes. That is a further part of the sentence, "by pumping, which could not be done if a flood of surface water were entering the well which the pump or bailer was incapable of removing."

Q. Can surface water enter a well that is full of mud fluid or drilling fluid?

A. In certain cases; yes.

Q. In what cases?

A. In cases where the head of the surface water is greater than the weight of the drilling fluid. I personally was at a well the other day in which they were carrying 450 pounds of pressure in the hole to hold back the surface water which was crowding into the hole during drilling.

Q. Would the surface water chase the mud fluid out of the well?

A. It would take possession of the well.

Q. Well, if there is mud fluid in a well, can surface water enter a well?

A. Yes; if the pressure of the surface water is superior to that of the mud fluid.

[fol. 484] Q. Do you know of cases where the pressure of surface water is greater than the pressure that is exerted by drilling fluid, when a well is full of drilling fluid?

A. Yes. I can take you to a well where they are fishing now for the tools, that the surface water has entered, where the well caved in under the action of the surface water and they are fishing for the tools now.

Q. Is that the kind of a situation that you think Cooper is referring to in this patent?

A. It is an extreme degree of that situation; yes.

Q. The kind that he is referring to?

A. Yes. He has water pressure in the well and he wants to exclude that water pressure, the column of water pressure, from the area in which he is making the test.

Mr. L. S. Lyon: If your Honor please, at the adjournment we were discussing the Cooper patent, Exhibit H-12, and I have some further questions on that patent.

The Court: What is the number of that patent?

Mr. L. S. Lyon: It is No. 1,000,583.

Q. Referring, now, to the hole 31 that we were discussing yesterday, shown in Figure 2 of the drawing, would it be possible to employ a device having such a hole and recover an entrapped sample? By an entrapped sample I mean a sample that is lifted from the well by lifting out the pipe.

A. You would not be able to recover any entrapped sample above that hole if it were open as shown in Figure 2. You might obtain the volume of fluid that would be below the hole within the pipe but with the form of device shown [fol. 485] in Figure 3 a sample could be obtained with the check valve 32 in place.

Q. Could you use such a check valve on one of the testers of the types employed by the defendants or plaintiffs in this case and operate the devices for the purposes intended?

A. Yes. You could use the check valve with the type called the circulating valve in defendant's device, which

would exclude fluid from the exterior, in place of the member 32 shown in the Cooper patent.

Q. Is that check valve numbered 32 that you are now referring to in the Cooper patent?

A. Yes.

Q. In the case before Judge Bryant, and I am going to read from page 950 of the record, did you testify as follows:

"Q.—You could not have a check valve corresponding to that numbered 32 in this patent on one of the testers of the Halliburton or Johnston type, whether it was closed so that you could let fluid in or the opposite, fixed so it would let fluid out, could you?

"A.—No."

Did you so testify?

Mr. Morgan: Just a minute. Read the whole answer.

By Mr. L. S. Lyon:

Q. "But my understanding of this is that those members can be provided for certain classes of work." Did you so testify?

A. You correctly read my statement; yes. But in further considering the disclosure here, where it states that the valve could be made either to open——

[fol. 486] Mr. L. S. Lyon: I don't think there is any question of the answer, your Honor.

The Court: No. The witness may answer what he wants to.

A. But in a further study of the disclosure here, which states that the valve could be made either to open from the inside or the outside, it is evident to me that if it opened from the inside and excluded the fluid from the outside, that it could entrap a sample.

By Mr. L. S. Lyon:

Q. There is nothing said in the Cooper patent about the springs on the check valve 35 being strong enough to withstand the pressure of drilling fluid in a well, is there?

A. No.—It just states that the valve could be opened either way.

Q. The packer in this Cooper device is not operated by movement of the pipe, is it?

A. You mean to set it?

Q. To set it or release it.

A. No. It is operated by the control of fluid pressure.

Q. And the valve 25 in the Cooper patent is not operated by movement of the pipe, is it?

A. No, it is not operated by movement of the pipe. And in that connection one of the reasons that I have continued to consider Cooper is because certain of the claims of the Simmons patent, one particularly, does not specify the instrumentality by which that valve is moved.

Q. But the claims that do specify that the valve is operated by movement of the pipe are not met by the Cooper patent, is that correct, in terms?

A. Not in terms.

[fol. 487] Q. Do you understand the disclosure of this Cooper patent beginning at line 46 on page 2 and ending at line 121 on page 2, with reference to avoiding the gas dissolving in the oil or water that is in the well?

A. Well, I know what I think it means, but—

Q. The method described by Cooper is one in which all the fluid in the well is fluid that comes in from the formation, isn't it?

The Court: You say all the fluid in the well?

Mr. L. S. Lyon: Yes, the fluid—

The Court: There is no drilling fluid?

Mr. L. S. Lyon: No drilling fluid, and that the only fluid in the well is fluid that is produced by the well itself.

A. That is the only fluid that he discusses. Whether or not drilling fluid is present during the drilling of this well and might be here present I don't know, but the only fluid he discusses are those fluids that are native in the formation.

Q. What Cooper describes he wants to do is to get the gas to come to the top of the well, in addition to the water and oil; isn't that correct?

A. In one description of his invention.

Q. And for that purpose he bails the fluid out of the well above the packer; isn't that correct?

A. You mean within the well itself and around the tube?

Q. Yes.

A. And in the sealed-off area above the packer?

Q. Yes.

A. Well, I do not see that place, but I seem to recall that there was a statement of that sort in the patent, and if [fol. 488] you will point it out to me I will be glad to acknowledge it, if it—

Q. Perhaps I can refresh your recollection by reading your testimony before Judge Bryant, at page 967 of the record in that case.

A. I would appreciate it.

Q. "And what you are trying to do is to get the gas to come to the top of the well in addition to water and oil; isn't that correct?"

A.—Yes.

Q.—And for that purpose he bails the fluid out of the well above the packer; isn't that correct?

A.—Under some circumstances.

Q.—Well, that is the method he describes, isn't it? Look at line 101 on page 2.

A.—Yes. He says that under certain circumstances he bails out the pipe 2.

Q.—He does not say under some circumstances, but he says when the gas is stifled by the water and oil?

A.—Yes."

Did you testify that way before Judge Bryant?

A. I testified that way, but I don't understand that that answers the question because, if he bails out pipe 2, he is bailing out the test or sample chamber and is not bailing out the well above the packer.

Q. What does he describe doing in the sentence commencing at line 101 on page 2, reading, "When the gas is again stifled by the water or oil the valve 23 can be closed and the pipe 2 bailed out, and after an interval, governed by the known action of the gas and liquids in the [fol. 489] well, the valve 23 can be again opened and the operation will be repeated"?

A. He states very definitely that what he does is that he closes the valve at the bottom of pipe 2 and bails out the material that is within the pipe, and that after that is bailed out, when conditions are proper, he can open the valve at the bottom of pipe 2, allow material to go into

pipe 2 again and repeat the bailing operation if desired.

Q. In the following sentences in the paragraph he brings out that, if the pressure is not sufficient to cause the well to flow to the top, that he pumps out the well, does he not, or pumps out the pipe?

A. Yes; that he pumps out the pipe 2. But he does not say that he removes all the fluid that is above the packer and within the well.

Q. Then, the only method that he describes in his patent for removing fluid from below the packer is by pumping or bailing, isn't that correct?

A. After he has entrapped the fluid within the pipe 2. As we have just read, he states that before he pumps or bails he closes the bottom valve. That entraps the material within the pipe 2 and then he removes it.

Q. The only way he describes removing it is by either bailing it out or by pumping it out?

A. Yes; within the pipe and the entrapped sample there contained.

Q. If the hole 31 is open at that stage while he is bailing out the well, why he will also bail out whatever fluid there is behind the pipe, will he not?

A. If the hole 31 is open and unobstructed, his bailing operation eventually would bail the entire well. But that does not appear to be the principal idea in his patent.

[fol. 490] Q. That method is not excluded, is it?

A. No; that method is not excluded. But that wouldn't give the test which he says that he wants to make for the presence of oil or gas.

Q. What is hole 31 for?

A. Hole 31, as he has stated, if left open, will permit the water from the casing above the packer to be pumped out or bailed.

Q. Is there any statement in this Cooper patent about how you get the apparatus out of the well?

A. No; I don't recall a statement of either introducing the apparatus into the well or removing it.

Q. The patent does describe that you can take the packer out independent of the rest of the apparatus, does it not?

A. I don't recall that statement. It says it can be moved about to different points in the well to search for a place in the well where the surface water can be permanently shut off.

Q. I will again see if I can refresh your recollection by referring to your testimony before Judge Bryant, at page 970 of the record.

"Q.—Doesn't the patent describe that you can take the packer out entirely independent of the rest of the apparatus?"

"A.—Yes. He states that."

Did you testify to that before Judge Bryant?

A. Is that the end of the sentence?

Q. Yes. I will show you the testimony if you want to see it.

A. No. If that is read from the testimony, I will say that I testified that way; yes.

[fol. 491] Q. Then, the packer is not fixed immovably to the pipe, is it, so that it can only move with the pipe?

A. No. It can be moved on the pipe, as I read a moment ago.

Q. You do not contend that any of the claims of the patent in suit read on this Cooper patent which are limited to operating the packer by movement of the pipe or operating the valve by movement of the pipe, do you?

A. If by "operation" you mean the direct operation of the packer to set it, it, of course, does not become operated by any movement of the pipe because it is dilatable and is operated by a fluid.

Q. Can't you answer that last question yes or no?

A. No, for this reason, that, when the packer is on the pipe, it might be possible to bodily move the two together, if you mean that by operation, but, if you mean setting, the packer is not set by movement of the pipe.

Q. You do not contend that any of the claims of this patent of Simmons read on this Cooper patent which are limited to operating the packer by movement of the pipe or operating the valve by movement of the pipe, do you?

The Court: You should answer that by yes or no, it seems to me.

A. In answering yes or no can that question be divided into two parts?

The Court: If you can answer it, do so, and, if you can't answer it, say so.

A. No. The setting of the packer and the movement of the valve in the Cooper patent are both effected by means other than the movement of the pipe.

By Mr. L. S. Lyon:

Q. Will you refer to the patent to Lyon, No. 46,124, De-[fol. 492] fendants' Exhibit H-1? Do you contend that any of the apparatus or method claims of the patent in suit here read on the disclosures of this Lyons patent?

A. Considered as an anticipation?

Q. Just answer the question.

A. No.

Q. This Lyons patent contains no disclosure of recovering an entrapped sample, does it, and by an "entrapped sample" I mean, as I have always meant in my examination, a sample that you recover at the top of the well by lifting it out in the pipe.

A. No, it does not cover a sample lifted out within the pipe, but it shows the recovery of a sample from the pipe.

Q. How do you get the sample out of the Lyons patent?

A. It comes out under pressure, either the native pressure in the formation or an imposed pressure of the pipe lowering into the well.

Q. In other words, according to the Lyons patent, if the fluid will not flow under its own pressure to the top of the well, you blow it out with some kind of a gas pressure; isn't that correct?

A. That is correct.

Q. Please refer now to the Latham patent, No. 56,234, Defendants' Exhibit H-2. Do you contend that any of the claims of the patent in suit read on the disclosure of this Latham patent?

A. No.

Q. The Latham patent discloses only a packer; isn't that correct?

A. And that is why it was cited.

[fol. 493] Q. It does not disclose any method or apparatus for testing a well, does it?

A. No. It was concerned with a packer on a pumping outfit.

Q. Will you please now refer to the patent to Kewley, No. 58,837, Defendants' Exhibit H-3. Do you contend that any of the claims of the patent here in suit read on the disclosure of this Kewley patent?

A. No. It was cited to show that that type of packer was existent in 1866.

Q. Is your testimony the same in regard to the patent to Dower, No. 249,228, Defendants' Exhibit No. H-8?

A. Yes.

Q. I will ask you to look at Figure 1 of this Dower patent and refer to the port O. Does that disclose an equalizing valve for a packer corresponding to the equalizing valve which you have referred to in your direct examination as existing in the packer on the Johnston tool?

A. That discloses means whereby lifting on the pipe will permit fluid to flow through the packer structure.

Q. In other words, when you lift up on the packer you open up a valve, so that the pressure above the packer is equalized below the packer; isn't that correct?

A. It would when those ports are disclosed, or uncovered, probably would be a better word.

Q. That is the same operation that you have in the packer that you referred to in describing the Johnston tool, isn't it?

A. That is the same result.

[fol. 494] Q. Now, will you please refer to the patent to Burr & Wakelee, No. 68,350, Defendants' Exhibit H-4. This is a device for pumping a well, isn't it?

A. The title of the invention is "Improvement in apparatus for testing deep wells."

Q. But what he actually describes is a device for pumping a well; isn't that right?

A. Well, he obtains his test sample by pumping, yes.

Q. And the pump is at the top of the well, a suction pump; is that right?

A. The pump mechanism, at least, is at the top of the well.

Q. The only way he describes of getting any fluid out of the well is by pumping it from the top of the well by suction of the pump at the top of the well, isn't that right?

A. Yes; that is the way he describes.

Q. Do you know how far you can lift fluid, how many feet, by suction from a pump above the fluid?

A. Well, that question was asked me in Texas, and if you care to read that answer—

The Court: Does not the court take judicial notice of that? The court knows something about a suction pump. I understand that the distance is about 32 feet, with water.

Mr. L. S. Lyon: And I asked the witness that in Texas, and he didn't know.

A. I stated about 26, if I recall right. It is in the record there.

The Court: That is one of the laws, I am quite sure, that the court takes notice of.

[fol. 495] By Mr. L. S. Lyon:

Q. Well, you don't contend that this device shown in the Burr & Wakelee patent could be used for the purpose of the plaintiffs' and defendant's devices herein issue, do you?

A. The structure?

The Court: Just answer that question yes or no.

A. Yes.

By Mr. L. S. Lyon:

Q. You do?

A. Yes.

Q. You think you could, instead of using a Halliburton or a Johnston tester to test one of these deep wells, that you could use this pump described by Burr & Wakelee, at the top of the well, and pump up the sample, suck it up?

The Court: What patent number is that?

Mr. L. S. Lyon: No. 68,350, your Honor.

The Witness: It is one of the earlier ones.

The Court. Yes. I see.

The Witness: Now will you please read the question?

(Question read by the reporter.)

A. No, not if "suction pump" means a pump that would only lift 26 to 30 feet, but he says it is a device for testing deep wells, and he certainly must have meant something more than a 30-foot hole.

Q. No matter what he said in 1867, this gentleman from Battle Creek, Michigan, is the apparatus that he describes there, that pump at the top of the well, capable of pumping a sample out of a deep well, an oil well several thousand feet deep?

A. If it is purely a suction pump, no.

[fol. 496] Q. That is all he describes, isn't it?

A. That is what he mentions, in those terms, yes.

Q. That is all he describes, isn't it?

A. Yes. But in the Simmons patent—

Q. I didn't ask you anything about that.

The Court: Let him explain.

A. In answering that question, in the Simmons patent it states that the preferred form of the invention is a device which would pack off the bottom of the well, establish communication with an area below the packed-off part, and by the flow of the material in the well would overflow the top of the well, and that was the preferred form of his testing device, and in view of the fact that this structure, irrespective of any pump, would perform that, my answer was as I have given it.

The Court: What structure?

A. The Burr & Wakelee structure.

By Mr. L. S. Lyon:

Q. Do you contend that any of the claims here in suit read on the disclosure of this Burr & Wakelee patent?

A. Not if entrapping a sample means to take the sample up in a pipe, and not considering, as the patent says, the preferred form.

Q. This Burr & Wakelee patent describes no valve at all below the packer, does it?

A. No. And if you were going to overflow the top you wouldn't require any valve.

Q. But there is no valve on the pipe in this Burr & Wakelee patent, is there?

A. No.

Q. You don't need to argue. Just answer.

A. No.

[fol. 497] Q. Does this patent to Burr & Wakelee state that this apparatus is to be used in a drilling well containing mud fluid?

A. It doesn't state anything about the fluid, but just states that they are going to explore the well at any depth.

Q. Does it say that it is a drilling well?

A. It doesn't say.

Q. It doesn't say anything about a well containing drilling fluid, rotary mud?

A. No.

Q. Was the rotary method of drilling wells known in 1867?

A. No, the rotary method wasn't known in 1867.

Q. Well, that answers the question. Do you see this circle with an "R" in it on the pipe above the lower packer in the drawing of this Burr & Wakelee patent?

A. It is a "K", I think.

Q. It is a "K". All right. What is that, according to the Burr & Wakelee patent?

A. In one form of the invention, when they use two packers, that is the hole through which the material flows into the tube through the confined area between the two packers.

Q. What shuts off the area below the bottom packer?

A. He states that when he uses that hole the lower end of the pipe is closed.

Q. And if this Burr & Wakelee apparatus was run down a well filled with drilling fluid the pipe would fill up with drilling fluid while it was being lowered into the well, wouldn't it?

A. It would.

[fol. 498] Q. Do you now admit or do you deny the use of this Burr & Wakelee apparatus for the purpose for which the defendant's apparatus in this case is used? Do you say it can be used or cannot be used?

A. I think it can be.

Q. I am going to read you from your testimony before Judge Bryant.

The Witness: May I—

The Court: Well, let me ask a question there. If its use depends upon the suction operation how could it be used beyond that distance?

A. It couldn't, your Honor, but that answer is based on the statement in Simmons, which is that—

The Court: No matter what that answer is based on. I am not interested in that. If this Burr & Wakelee patent could be used for the same purpose that the Simmons patent could be used for, I am unable to see how that could be, if the Burr & Wakelee patent depends upon suction for its operation, and the other does not, of course.

A. Well, if we must include, or if I must include a suction pump, as has been referred to here, then it would not be the same structure.

The Court: But that is the patent, isn't it?

A. That is the patent.

The Court: The use of a suction pump?

A. Yes; but the patent shows a structure, and he is asking me if that structure would be capable of obtaining a sample, and by the structure—

The Court: Let me ask you: What would take the place of the weight of the atmosphere as producing the power of [fol. 499] the suction? In other words, how could the sample be lifted?

A. By the pressure within the well.

The Court: If there were pressure enough within the well you wouldn't need any suction pump at all?

A. No. It would overflow the top of the well, and in that case, as the Simmons patent said, you would get the sample.

The Court: But the Simmons patent is not confined to such cases, is it?

A. No, it is not confined to such cases.

The Court: Then that would be a material difference, wouldn't it?

A. Yes, the difference being that in the claims of the Simmons patent the sample is claimed as being caught within the pipe and lifted with the pipe.

Q. Now will you refer to the patent to Carll, No. 73,577, Exhibit H-5? Do you contend that any of the claims in suit read on the disclosure of this patent?

A. No. This was just cited to show the methods at that time of entrapping the fluid from the bottom of the well within a container.

Q. The device actually described in this Carll patent is a pressure bailer, isn't it?

A. A sand pump.

Q. That is a pressure bailer, isn't it?

A. Yes.

Q. And you use such a device to bail out a well?

A. And to obtain samples, as explained by Carll in his literature.

Q. By bailing?

A. Yes; by entrapping it in such a structure.

[fol. 500] The Court: Why is not the discharge of the fluid to be tested into this container in the Simmons patent and hoisting that to the surface a bailing?

Mr. L. S. Lyon: If you had a bailer, you have got to bail out all of the fluid in the well down to the point where you want to get a sample. With the Simmons device you can leave the fluid in and get the sample by shutting off the pressure above.

The Court: The word "bailing" means the removal of everything in the pipe, does it?

Mr. L. S. Lyon: Down to the point where you want to get this bucketful.

Q. Isn't that right, Mr. Abbett?

A. The bailer would extract the sample at the point at which it is opened and it would come in right there by the hydro-static pressure.

The Court: I am asking as to the use of the term "bailer." Does the operation of a bailer mean the removing of all of the contents of the hole to get at that in the bottom?

A. No. A bailer does not function until it reaches the bottom of the hole.

Q. What bails the material above that?

A. As they take it out from the bottom of the hole——

Q. Isn't that done by a bailer?

A. From the bottom of the hole——

Q. No, no. Above the bottom.

A. Yes. Then they continue to bail.

Q. That is a bailer, too, isn't it?

A. Yes.

Q. All right. And the bailer also bails from the bottom of the hole?

A. Yes.

[fol. 501] Q. And from the whole area above it?

A. If it is the ordinary type of bailer that opens at the bottom, first it would have to encounter the bottom of the hole before any of the fluid would be admitted. If it was a type of bailer like a bucket, then any time you lower it and pick it up, of course, you would bail. But sand pumps and the ordinary type of bailer had an opening in the bottom so that you lowered them to the bottom of the hole and took a bailful of the fluid in the bottom of the hole and carried it out.

Q. You could do it just as effectively if you were working on the surface there, couldn't you?

A. Yes. Or pardon me. The upper ends of the sand pumps are closed and the fluid can only get in the lower end, and the only way it can get in there——

Q. What I have in mind is this: You have a well full of fluid and so forth and you must bail that out to take a sample from the bottom, must you not?

A. Not with a sand pump.

Q. I haven't gotten to the sand pump yet.

A. Pardon me.

Q. As the term is generally used, bailing applies to the process of removing that column of liquid?

A. Broadly considered.

Q. Now, you don't have to start at the bottom, do you? You could just as well start at the top and bail, couldn't you?

A. You could. But the structure and the general practice are that they lower the device to the bottom and there it is opened.

[fol. 502] Q. Wouldn't there be some loss in a well of say 6,000 feet deep in going all the way down to the bottom? I would think it would be simpler to start in at the top.

A. But in the use of these devices they want to get the material that is at the bottom of the well, the cuttings and fluid.

Q. How do they know with the ordinary bailer what they have got?

A. They lower it to rest on the bottom and then it opens and the material comes in.

The Court: All right.

By Mr. L. S. Lyon:

Q. You don't desire that the court shall understand that you can take a sample of the natural fluids in the well that are being held back by the pressure of the mud fluid by a bailer unless you bail out all of that mud fluid, do you?

A. No; I don't intend that to be understood. But I intend to state that a sand pump, which is the type of bailer here shown, takes out such fluid as is present at the bottom of the well.

Q. This Carll patent does not describe taking a sample of fluid, does it? It describes taking a sample of formation, does it not?

A. Yes. He gets the cuttings that are at the bottom of the well with the liquid.

Q. If he wanted to get any fluid with this device from the formation in the bottom of the well that was being held back there by the pressure of the drilling fluid above it, it would be necessary for him to remove that column of fluid in order to get a sample with the bailer, wouldn't it?

A. Yes.

[fol. 503] Mr. L. S. Lyon: Is that clear, your Honor?

The Court: It would be necessary to remove the column of fluid, you say?

Mr. L. S. Lyon: That the weight of the column of fluid is holding this natural fluid back and preventing it coming into the well. And, if you stick a bailer down through the column of fluid and try to get a sample, you won't get any because the weight of the fluid is holding the natural fluid back and preventing it from coming into the well.

Q. There is no apparatus on a bailer to pack off the well and relieve the formation from the weight of the mud fluid, is there?

A. No. The bailer or sand pump relies upon the hydrostatic head of the fluid within the hole to move the sample in, and a testing device would pack off that fluid and entrap the sample from the area beneath the excluded column.

Q. What do you mean by a sample in the case of a sand pump such as is shown in this Carll patent?

A. It is the fluid at the bottom of the well, with such materials as may be suspended in it, the cuttings and so forth.

Q. The sample that they look at is the cuttings that they grab out with this sand pump, isn't that correct?

A. Yes. But it must come with the fluid.

Q. You don't know that there is any natural fluid coming in from the formation at all if the well has got a column of mud fluid in it, do you?

A. No. But he wasn't talking about columns of mud fluid.

[fol. 504] Q. Then, he wasn't running this sand pump down through a well that is filled with drilling fluid, is that right?

A. I don't know. He doesn't say that he was.

Q. As a matter of fact, in 1868 and as described in this patent this sand pump of Carll's was lowered by a string of poles, was it not?

A. Yes; an augur stem.

Q. Will you please refer to the patent to Birge, No. 182,093, Defendant's Exhibit H-6? This is like the Carll patent in that all that it discloses is a sand pump or pressure bailer, is that correct?

A. It is the valve for such a structure.

Q. You don't contend that any of the claims in suit here read on the disclosure of this Birge patent, do you?

A. No. This structure shows a valve which opens by lowering and closes when it is lifted to control the entry of fluid into a bailer container.

Q. Will you please refer to the patent to Koch, No. 208,610, Defendant's Exhibit H-7? All this patent discloses is an oil well casing set on a shoe, isn't that correct?

A. That is right. It shows a packer on a shoulder.

Q. How do you know that is a packer instead of a shoe, that part D? Well, I will pass that as it may be a packer. Do you contend that any of the claims here in suit read on the disclosure of this patent?

A. No. This was just to show the state of the art.

Q. The pipe A has no valve, has it?

A. No.

Q. Nor the pipe E? Neither of the pipes has a valve, has it?

A. Not shown in the drawing.

[fol. 505] Q. And the packer or shoe which is numbered or lettered D in the drawing of this patent is on the casing and not on the tube which receives the fluid from the well, is that correct?

A. That is correct. It is a gum elastic packer D mounted on a tubular member, which is in this case the casing.

Q. Will you please refer now to the patent to McGregor, No. 582,828, Defendants' Exhibit H-10? This patent discloses only the casing shoe, is that correct?

A. Not McGregor. Is it No. 582,828 you are referring to?

Q. This patent shows a casing in a well with a frangible disc at the bottom of the casing, does it, and a ball seated also in the bottom of the casing? Is that correct?

A. That is correct. This structure as compared to the ordinary sand pump which we have considered provides means for allowing fluid to come into a pipe which runs from the bottom of the well to the top of the well under a hydrostatic head of the column within the well, and thus distinguishes from the Carll and other sand pump patents

where we have a column within which the fluid can rise to the top of the well.

Q. What McGregor intended to use this apparatus for was to recover diamonds that had been lost in a well; wasn't it?

A. That was one reason. He said that he also could obtain samples of subaqueous bottoms.

[fol. 506] Q. He didn't say anything about obtaining samples of fluid that the well might produce if the pressure of the drilling mud was relieved from the formation, did he?

A. No; he doesn't say anything about relieving the pressure of the drilling mud from the formation. But he does——

Q. Now——

Mr. Boyken: Let him finish his answer.

Mr. L. S. Lyon: I think that answers the question.

The Court: Let him explain.

A. But he does state that he obtained samples of a subaqueous bottom, which would be liquid from some lower region in the body of liquid.

By Mr. L. S. Lyon:

Q. How do you know it would not be samples of the cuttings and that any natural fluids in the formation were held back by the other fluid in the well?

A. I don't know that. But those cuttings would be suspended in the liquid at the bottom of the well.

Q. But not necessarily in any liquid that the well produced, isn't that correct?

A. No; that is not correct because the well is full of liquid. It might necessarily be the liquid the well was producing.

Q. If the well had been filled with drilling mud that was manufactured out of the well, then these cuttings might be suspended in that, isn't that correct?

A. That is correct. They would be suspended if there were cuttings in any liquid present in the well.

Q. You would get these cuttings by the use of this McGregor patent in an analogous manner to that by which you have described you would recover them with a sand [fol. 507]. pump in the case of the Carll and the Birge patents, isn't that correct?

A. If you obtained cuttings. But he does not say that the subaqueous bottoms are cuttings.

Q. Do you contend that any of the claims in suit here read on the disclosure of this McGregor patent?

A. No, because there is no packer—

Q. I don't think you need to argue the question. You said that you don't.

Mr. Boyken: I think, your Honor, he ought to be permitted to give his reasons, and, if they are not proper, they can be stricken out.

The Court: Sometimes. I wouldn't say the witness is disposed to argue but he is disposed to say a little more than is necessary. I don't think anything further is necessary there.

A. All right.

The Court: I think you already stated that it was to show the state of the art.

Mr. Boyken: Yes. After all, your Honor, we contend that there is no invention in the patent in suit over all of this art, not separately but collectively, and certain of these patents are more important than others. I think it is really a waste of time to go over each patent and ask the witness if the claims of the Simmons patent are readable on all of these patents here. We contend that there is no invention over the art generally and then we point out about five or six particular patents. There is no use wasting any time beyond those. We don't contend that every one of these patents in the prior art fully anticipate the patent in suit.

Mr. L. S. Lyon: Then why did you put them in?

[fol. 508]. Mr. Boyken: To show the state of the art.

Mr. L. S. Lyon: I don't understand what the purpose of showing the state of the art is if it doesn't contain anything that anticipates the invention.

The Court: Proceed.

By Mr. L. S. Lyon:

Q. Referring to this patent to Bloom, No. 785,933, Defendants' Exhibit H-11, which is the one I thought I was looking at before, all that shows is a casing packer shoe, isn't that correct?

A. That is correct; a conical casing packer shoe fitting into a reduced bore.

Q. And you don't contend that any of the claims in suit read on the disclosure of this patent, do you?

A. No. This was to show a "rat-hole" packer or its equivalent.

Q. Will you refer now to the Halliday patent, No. 1,510,669, Defendants' Exhibit H-15? Do you contend that any of the claims in suit read on the disclosure of this patent?

A. Yes; I do.

Q. Which ones? Which particular claims, or do all of them?

A. I contend that as far as structure goes that all of the apparatus claims are met by Halliday since the limitation of positively pressing against the wall of the formation is an immaterial one and does not define patentable novelty over the showing of Halliday, where the packer is pressed against a metal liner within the walls of the formation.

[fol. 509] Q. Do you contend that this Halliday patent describes the method defined in claims 8 and 18 of the patent in suit?

A. He does not describe a—

Q. Can't you answer that yes or no? I am asking you what you contend.

A. Will you please read the question?

(Question read by the reporter.)

A. No.

Q. But you do contend that you can read all of claims 9 to 17 inclusive and claim 19 of the patent in suit on the structure described and shown in this Halliday patent, do you?

A. Yes; if you ignore the limitation to positively press against the formation.

Q. Let's take the first claim, claim 9. Where is the valve called for by that claim in the Halliday patent?

A. The valve in the Halliday patent is the outer sleeve within which an inner sleeve telescopes and fits, the two members being moved relative to each other by the tube supporting the structure at the top of the well to bring the holes in matched or unmatched relationship and thus to permit fluid to come into the device and to be entrapped when the structure is closed.

Q. This Halliday device is a perforation cleaner, isn't it?

A. Yes. It is a—

Q. Just answer that yes or no.

A. Yes.

[fol. 510] Q. What do you use a perforation cleaner for in an oil well?

A. Normally, you use a perforation cleaner to clean the perforations that are formed in the casing but in this particular device Halliday states that he uses the structure for not only a perforation cleaner but can leave it in the well as a part of a flow device.

Q. Does he say anything about using it for testing the productivity of a formation in a well containing drilling fluid?

A. No.

Q. Referring to this structure in the Halliday patent which you say is a valve, is it possible to close the structure so as to seal off the pipe 34 from the entrance of fluid into the well?

A. Yes.

Q. How would you operate the pipe to do that?

A. You would rotate it from the top of the well.

Q. And that would close all the ports, would it?

A. No. He has a structure here that would selectively close the ports.

Q. And open others?

A. And open others.

Q. In other words, you could not close any of the ports in this Halliday device without opening some other ones, isn't that correct?

A. No; that is not correct. I call your attention particularly to Figure 21, which shows all of the ports closed.

[fol. 511] Q. How would he do that?

A. By rotation of the string of tubing supporting the structure. In fact Figures 18 to 23 show the different combinations of ports which he can close selectively.

Mr. Boyken: There are two Halliday patents, Mr. Abbett. Which one are you referring to?

A. No. 1,510,669.

By Mr. L. S. Lyon:

Q. What does he close them for? What does Halliday state he wants to close the device for?

The Court: The patent shows that, of course, doesn't it?

Mr. L. S. Lyon: He has stated that there is a description here and I would like to have him point it out.

The Court: "My invention relates generally to devices for cleaning oil well casings in the region of their perforated sections and dislodging and disintegrating caked formation which lies around and in close proximity to the exterior surface of the casing."

By Mr. L. S. Lyon:

Q. Does this Halliday device have any packers on it?

A. Yes.

Q. What are they? Is it parts 5 and 6?

A. 5 and 6; yes.

Q. Aren't those swabs in fact instead of packers?

A. No; I don't consider them to be. The fact of the matter is that on page 5, begin-ning with line 99, he says that this device may be used as a packer at any desired depth in the well.

[fol. 512] Q. This Halliday device is adapted to be operated by moving it up and down in a well, isn't that correct?

A. No. I don't understand that to be so because he expressly shows means for locking the structure with relation to the casing in order to actuate it.

Q. Doesn't he move this back and forth in a well to clean off this pipe? Isn't that what he describes doing?

A. I don't recall that.

Q. There is no way of setting this packer in this Halliday device, is there, in the sense that you expand the packer in the Simmons tester or in the plaintiff's or defendant's testers?

A. The packers are mounted on a sleeve and form a sealing fit with the casing.

Q. How would you get that device down a well that was full of drilling fluid?

A. You could either by-pass the fluid through it or move it down.

Q. What is going to happen to the mud fluid ahead of it?

A. Well, such mud fluid as was ahead of it would be forced out through the perforations.

Q. This device is not adapted to be lowered down a well that is full of drilling fluid, is it? It is not operated under those conditions, is it? You know that, don't you?

A. I know that.

Q. And it doesn't have on it a packer, in the sense of a device that is contracted going down the well, so that it can pass through the drilling fluid and at some point in the [fol. 513] well is then set and expanded to shut off the drilling fluid; isn't that so?

A. That is correct. That type of packer was old in the art and is not shown here.

Q. And wasn't intended to be used on the Halliday device, was it? He wanted this type that would swab the casing as it went down; isn't that right?

A. No, I don't understand that he wanted to swab the casing as he went down, but he wanted to form a seal so that he could clean or wash at different zones when he got there.

Q. Then this device can't go down the well if it contains drilling fluid unless the valve is open, can it?

A. No, I don't believe it could.

Q. Now, will you return to the Macready patent, No. 1,522,197, Exhibit H-17? Do you contend that any of the claims in suit read on the disclosure of this Macready patent?

A. No. This was cited to show the use of a "rat-hole" packer on a testing device.

Q. There is no valve on the Macready device, is there?

A. No, there is no valve on it, but in considering the patent I had in mind —

Mr. L. S. Lyon: I don't need an argument from the witness as to why he cited it. I am trying to distinguish it in accordance with your Honor's suggestion here, as quickly as I can.

A. There is no valve in it.

Q. And it is a two-string device, is it not?

A. Yes.

[fol. 514] Q. And there is no disclosure in the patent of recovering any entrapped sample, is there?

A. Not by elevating the drill pipe, no.

Q. Now, referring to the publications, the three publications that have been offered in evidence here as Defendants' Exhibits I-1 to I-3, do you contend that any of those describe the recovery of an entrapped sample by elevating the pipe containing the sample, those publications?

A. No, except in the use of the sand pump.

Q. And in that case the sand pump was used in the manner we have already discussed this afternoon?

A. Yes.

Q. And it doesn't need to be repeated. And none of those publications describes an apparatus for testing the productivity of a formation encountered in the drilling of a well, which apparatus has a valve structure to be opened to receive a sample and to close to entrap the sample while the pipe is being lifted out of the well; is that correct?

A. That is correct. They show the use of the packer with the test string used for testing selected areas of the formation.

Q. That is already shown, or that same thing is shown in the patent to Koch, No. 208,610, Exhibit H-7, is it not?

A. It shows the structure, but it does not show the thing described as being used as a flow device and for the purpose of making tests in a well, and that is why this literature has been cited.

Q. At the time these publications were written were wells drilled by the rotary method?

A. No, they were not.

Q. I have just a few questions to ask you about the Franklin patent, additional questions, and then we will have covered all of the prior art cited by the defendants. The Franklin patent was taken out before rotary drilling was used; isn't that correct?

A. Yes.

Q. Is there any statement in the Franklin patent to the effect that the device is to be used in connection with the drilling of a well at all?

A. No, there is not.

Q. Does Franklin refer to making any tests during the drilling of a well to recover a sample of natural fluid in the well?

A. No, he does not use the word "test" in the patent.

Q. Does the Franklin patent anywhere describe or direct that any entrapped sample shall be recovered?

A. He does not direct that any entrapped sample would be recovered, but he describes an operation of the tool whereby it would be recovered, when he states that the lower valve is closed before the withdrawal of the tool from the well.

Q. I refer now to this Franklin apparatus being used for recovering an entrapped sample, that you could only use it to recover an entrapped sample provided a packer was employed for the purpose that I have stated.

A. Yes, to obtain an entrapped sample from the bottom of the well.

Q. Now, according to the disclosure and specific directions of this Franklin patent, the purpose of the valve structure was to keep fluid out of the pipe both going into and coming out of the well, and there is no disclosure anywhere in the Franklin patent of using the valve structure to control the flow of fluid into the pipe and entrapping the fluid in the pipe, is there?

[fol. 516] A. I don't recall any statement that the structure keeps the fluid out of the pipe coming out of the well. If you will point it out—it says that they would keep it closed coming out of the well, but——

Q. Now, he says—look at line 20, page 1: "My device is intended to perform the offices of two different classes of devices now in use for controlling and regulating the flow of wells, as follows: When the tubing is being put into the well or withdrawn from it, it is desirable that no flow take place through it. This is effected, so far as the placing in of the tubing, by a brittle disc, which is placed in the tubing at one of the lower joints, and which closes the tubing until it is broken, which is done after the tubing is in the well by dropping down upon it a sufficient weight to break it; but this is of no service in keeping the tubing closed while drawing it, and, indeed, there is no device to my knowledge, except my own, which will close the tubing while it is being drawn."

A. That is correct.

Q. Do you find any statement there that any fluid is to be entrapped in the pipe and withdrawn with the pipe from the well?

A. No, he doesn't say that. He says he wants to keep the pipe closed as he comes out, and if it was standing with fluid in it and the pipe was closed it would remain in it.

Q. But he doesn't mention that there is to be any oil or other fluid in the pipe while the pipe is coming out of the hole, does he?

A. He doesn't make that statement. If there was oil in the pipe it would be closed——

Mr. L. S. Lyon: Now, I think that is just argument. I think that is all, your Honor: I think that completes our cross-examination.

Mr. Boyken: No redirect examination.

[fol. 517] PAUL J. HOWARD, called as a witness on behalf of the defendants, being first duly sworn, testified as follows:

Direct examination.

By Mr. Wright:

My name is Paul J. Howard. My occupation is petroleum engineer. I am now employed by the State of California, in the Division of Oil and Gas, and am in charge of the Bakersfield office of the Division. As to my duties in relation to testing of water shut-offs, occasionally I make tests myself but I supervise the work of two inspectors and take over their tests that are normally made in this connection and give the final approval in cases of shut-off and decide as to tests that are turned down.

On the 20th day of October, 1935, I witnessed a test on the Union Oil Company well S. & M. 29. I have already examined Defendants' Exhibit K, and it was either that tool or one just like it that was used. I visited the well. The drill pipe with this tool was in the hole at that time. I witnessed the packer being set and the valve opened, and as soon as the valve was opened—I had better state first how the packer was set. The packer was set by rotating the drill pipe to the left. Then the valve was opened by rotating the drill pipe to the right, and immediately the drill pipe was rotated to the right a blow of air occurred from the drill pipe. A rag was placed over the top of the drill pipe dampened with mud, to show the air flow from the drill pipe. It immediately blew up as soon as the valve was opened. A fairly strong blow occurred for about four [fol. 518] minutes, followed by slightly less blow for 13 minutes. At the end of that time the drill pipe was rotated to the left, which closed the valve, and this was shown to be the case by the fact that the blow immediately ceased, and, to be sure that the blow hadn't ceased because of

some condition in the well, that was opened again, and then the blow started again, and the pipe was rotated back, closing it. Then the drill pipe was raised, which released the pressure, and it was held in that position, and we tried to determine then whether the valve had leaked, so we kept this dampened rag over the top of the drill pipe, and there was no further blow of any kind. If there had been a leak this would have been evidenced by the fact that the mud around the drill pipe would have dropped in the hole. That did not occur. The drill pipe was then pulled from the hole, and each time a stand was disjointed and set back on the derrick we had a chance to check the fluid in the hole, and there was no evidence of any dropping of the fluid in the drill pipe while it was standing idle. When the drill pipe was completely removed we found that it contained 150 feet of fluid. The top 100 feet of fluid consisted of gas and oil-cut mud, and the bottom 50 feet consisted of mostly—there might have been a trace of mud in it—but mostly of fluid. We could see that it was practically all oil and oil sand. And with the tool hanging in the derrick below the last joint of drill pipe there was no leakage from the tool. If there had been it would have been evidenced by an oil leak, inasmuch as oil was found in the bottom of the tool, with no evidence of further water. On the basis of that showing I approved the test of shut-off, as indicating that no water had access to the hole from above the point of cementing the casing in the hole.

[fol. 519] The type of packer that was used upon that test is the packer that was commonly used by the Johnston Testing Tools. Defendants' Exhibit G illustrates the type of packer that was used. The packer over here on the larger tool, that is the type that was used. This well was located in Kern County and was between sixteen and seventeen hundred feet in depth. I have not the exact figure with me but it was somewhere around 1,650 or 1,660 feet where the shut-off was made. Water shut-off tests are made to demonstrate that when the casing is cemented in the well that all fluids above the shoe of the casing have been excluded from the well; in other words, that no fluid can come down around the outside of the casing and get into the hole. It is not the purpose of a water shut-off test to test the productivity of the formation. I have

already testified that I had to pass upon all tests in the Bakersfield office.

Q. Do you recall any test made by the Halliburton Company in which a straight wall or hole packer was used in effecting a seal in the casing?

A. So far as I have any knowledge there has never been a straight hole packer used whereby the slips and packer were set by setting the bottom of the drill pipe or the anchor that is provided below it, this perforated pipe or any other pipe below the tester, being set on bottom in order to set the slips.

Mr. Wright: You may cross-examine.

Mr. L. S. Lyon: I move to strike the testimony of the witness, your Honor, on the ground that it is not material to any issue in this case. It appears from the witness' testimony that he was using a combination device here that [fol. 520] was the subject of the discussion had this morning. It is the same proposition.

The Court: The motion is denied.

Mr. L. S. Lyon: An exception.

#### Cross-examination.

By Mr. L. S. Lyon:

In 1919 I started working for the Standard Oil Company in the oil fields just after being released from the army and I was there for six months. Then for a year I was away from it. Then I commenced college, studying petroleum engineering. That was in 1920. And since then I have either been at college or in the oil fields or in the petroleum industry. I got out of college in 1924. I have not worked for the State ever since that time. I worked for the Standard Oil Company at the El Segundo refinery in a petroleum technological capacity for four years and a half. Since the fall of 1928 I have been concerned with water shut-offs and oil well tests. I have been with the State Division of Oil and Gas since that time.

The first occasion I had to actually witness a test of a well with a formation tester was while I was in the Taft office in 1932. Prior to that time other methods were used as a general rule. I witnessed tests by the Standard Oil Company and Honolulu Oil Company and I won't say as

to any others. The first knowledge I have of this tester being used was while I was with the State Mining Bureau in the Long Beach office. These testers were not used at that time in the Long Beach field but our Division witnessed tests of these devices in other fields at that time. I [fol. 521] would say that the first time that these testers were being introduced in the State of California was about 1930, although I can't give you the exact time. I never saw a device like this Defendants' Exhibit K used before this incident on October 20, 1935. I examined the inside of the valve in Exhibit K. I examined it and my test indicated that it did not leak. It seems to me that the test I made indicated that conclusively it did not leak. I see no reason why it should leak from my examination of it. I examined the construction of the valve inside and I realize that there is a little play in that valve. As to how the construction of that valve compares with the drawing of the Franklin patent, Defendants' Exhibit H-9, I have never made a detailed study or comparison of the two instruments. Looking at the drawing, the device itself is very similar to this drawing. I wouldn't say that it is made exactly as this is made. There is a difference possibly. There are no scales given on here, but there is a difference possibly in the size of the opening. It may be somewhat different. But the method of aligning the holes in both plates is similar. According to this drawing in this patent fluid could not pass into the chamber above the valve, but it appears from this drawing that it could pass into the chamber below.

Q. That would mean that while the valve was being operated to take a test, that is, the valve was standing open, the mud fluid or drilling fluid could flow down from outside of the drill pipe, down at the point you have indicated in the structure, and down below the packer, could it not?

A. No; it couldn't.

[fol. 522] Q. Why not?

A. I am not familiar with the details but I know that it didn't on the test because we checked the fluid in the well and that was conclusive proof that it didn't occur.

Q. But look at this drawing.

A. I can't argue about the details of the drawing because I made no study of it. I wouldn't want to say about the drawing but I know that it didn't occur.

Q. If it was made in accordance with that drawing, that would occur, would it not? You are an engineer and that is a very simple drawing.

A. It is very simple but it hasn't enough explanations to enable me to state definitely.

Q. You can't tell, then, from the patent whether the device would prevent that flow of drilling fluid, if any drilling fluid was there, or not? Is that your answer?

Mr. Wright: If you: Honor please, I don't know if I am clear on the question. Does that relate to the drawing or to the patent?

Mr. L. S. Lyon: To the drawing of the patent.

A. The drawing itself is not self-explanatory. As you will note, there is plenty of description goes along with it, which I have never read.

Q. The whole patent is only a page and a quarter long. You had better just look at it and see if you can find anything—

A. I wouldn't attempt in a moment's perusal, with that description on here, to come out with a full-fledged statement of whether it would work or wouldn't. I don't consider myself capable of doing it in that short a time.

The device that I refer to was not welded up when it was pulled out of the hole. It was taken apart by un-[fol. 523] screwing various parts. I would not say that there is no weld in the device at all; I didn't say that. It may be in certain places. Parts of it might have been welded up at the time that I saw it run. I don't know whether it was. Looking at the Defendants' Exhibit K now, I see that a weld has been put on it at this point, where it has been spot welded. And the evidence is here that it has been spot welded at that position. That device was not cut loose to show me. There was no welding device used to open that valve when I saw it. It hadn't been welded when I saw it. I don't say it wasn't welded prior to that time but it was not welded when it was in use in the test I witnessed. It was merely unscrewed and taken off. There are two welds on here, one on each side. That shows where probably it was together at some time or other but it wasn't at the time I made the test. I don't know whether those weld marks were on there at the time I made the test. It was not welded shut at that

time. I don't note any welding in the drawing of the Franklin patent.

Q. If the valve when opened did allow mud fluid from outside the drill pipe to run down through the valve and into the formation below the packer, would that destroy the test?

A. Possibly. It would depend on the amount.

Q. If there was any appreciable clearance of that kind, then the pressure of the drilling mud would be rapidly imposed on the formation below the packer, would it not?

A. After the valve was opened; yes.

[fol. 524] Q. And wouldn't that destroy a test?

A. If there was any appreciable amount. Of course, if there was a small amount, which we could measure at the surface, then we could account for that much mud being in the drill pipe when it was withdrawn, but, if there was any great amount of leakage, it would be impossible possibly to measure it accurately; and in that case we would consider that the test was not effective.

Q. Did you consider this a satisfactory test?

A. I did.

Q. And you had no difficulty in knowing whether the valve was opened or closed?

A. No difficulty whatsoever.

Q. Where did this oil come from in this test?

A. The oil came from the formations below the point at which the casing was cemented.

Q. I thought you said you were making a test to determine whether the pipe was dry.

A. You are correct. I made the test to determine whether any water had access to the hole from around the casing, and there was no such access. But in connection with that, in practically all of our tests, due to the fact that some formation had to be left open below the shoe, there is liable to be some fluid, oil or water or whatever the case may be, come in from those formations that are open. They are not necessary to the test but they occur with it and we value them for whatever value they may have.

Q. Then, when you make one of these casing tests, incidental to that you do actually test the formation ahead of

A. For whatever amount is open to the hole; yes.  
[fol. 525] Q. And there is always some open?

A. Yes. There has to be some open at all times.

Q. And the packer is positioned in the well truly in the casing but so positioned relative to the formation that it is adjacent to that formation that is open below the hole?

A. Yes. The packer is usually set at a point from 5 to 10 feet above the casing shoe.

Q. Therefore, the packer relieves the open formation from the pressure of the drilling mud up in the well, does it not?

A. That part that is open to the hole at that time.

Q. In other words, the packer does that whether you set the packer towards the lower part or bottom of the casing or whether you set the packer out against the formation itself?

A. Well, if it were set against the formation itself, we would be unable to make a test of shut-off under those conditions.

Q. But I mean so far as testing the open formation.

A. Yes.

Q. The packer performs the same function whether set in the bottom of the casing or set against the formation itself?

A. Yes. I admit that any formation that is open to the hole below the casing shoe at the time of that test is relieved of the pressure of the mud fluid that surrounds the drill pipe.

The only disc employed in this Defendants' Exhibit No. K was the disc that you see with the opening in it. There was nothing in the drill pipe to keep the drill pipe dry other than in this valve. I didn't employ any go-devil. I was not present at the time this device was started at the [fol. 526] top of the well, but I saw it when it was withdrawn from the hole and saw it completely taken apart, and examined it carefully at that time. I didn't see it go into the hole. The drill pipe was down in the well at the point where it was desired to set the packer when I got there; it had already reached that point.

FREDERICK A. HEITMEYER, called as a witness in behalf of the defendants, being first duly sworn, testified as follows:

Direct examination..

By Mr. Wright:

My name is Frederick A. Heitmeyer. My occupation is petroleum engineer. I am a graduate of the University of California at Berkeley and have a degree in geology and petroleum engineering from that university. I am now employed by the Standard Oil Company of California and reside at Taft, California. I am employed as a petroleum engineer and have charge of a considerable number of tests, both shut-off and formation tests, with the Standard Oil Company. I determine points for cementing casing, and other duties that are given to a petroleum engineer.

I have been present a considerable number of times when the Johnston device was run; I would say about 125 to 150 times. In my opinion, the function of the trip valve is to serve as an entrance valve, to permit the entrance of a mud fluid, a cognate fluid, or gas or water, or whatever the case may be. It serves another purpose, and [fol. 527] that is, it gives a very positive indication that at the time the test was made no drilling fluid had entered the drill pipe. In my opinion, the Johnston device would not be operable to entrap a sample, under normal conditions existing in a well, without the use of a trip valve. My reasons are that we have no control over the actions of the main valve or bottom valve. We do not know whether or not we are going to encounter obstructions in the drill hole or bore hole which will give sufficient weight to the packer, that the packer will take sufficient weight to open that bottom valve. The hydrostatic pressure from below in a hole in the normal setting of a packer would cause the main valve to open prior to the time you are ready to take a test.

In making a formation test we ordinarily run the drill pipe dry, that is, with no fluid in the drill pipe above the trip valve, under normal conditions. The packer is run to the seat or tapered shoulder, where the "rat-hole" or smaller diameter hole starts. It is then spudded. What I mean by "spudded" is that we pull it up and set it firmly,

so that it will be firmly seated in that shoulder, before we drop the go-devil. In that spudding operation we give it the full weight of the drill pipe, or sufficient weight to open the main valve, before the go-devil is dropped. During the spudding operation if the trip valve was not in the tool or in the pipe the fluid would have access to the drill pipe and would nullify the test, or the information would not be satisfactory. The function of the main valve is to entrap the fluid sample, after the trip valve has been opened and as the drill stem is being withdrawn. I believe that it is necessary in drilling operations to use de-[fol. 528] vices through which circulation may be established at will, so as to prevent possible blow-outs; and by "blow-outs" I mean gas overcoming pressure induced by the weight of the mud. If a well blows out it may mean the total loss of the well. Another purpose for utilizing circulation, other than taking care of blow-outs, is that sometimes in withdrawing the packer it will meet an obstruction in the hole, and it will stick, as we call it, freeze, and we would have to circulate it loose. In both of the instances that I have mentioned I have assumed a condition where the tool has been partially withdrawn.

I am still employed by the Standard Oil Company.

#### Cross-examination.

By Mr. L. S. Lyon:

I graduated from the University of California in 1924 and have been employed in the oil fields from 1924 to date, always in the employ of the Standard Oil Company of California. I first saw a formation tester in 1933. That was not the first time I had known of one being used by the Standard Oil Company. The date of the first use by the Standard Oil Company that I know of, I believe was in 1930, but I cannot give you the exact date. Up to 1930 the Standard Oil Company of California tested the productivity of formations in their wells, in the first place, by coring and sampling of formations. If samples indicated that formations were productive of either oil or gas, a string of casing would be cemented above that. We would then either bail or swab or employ a gas lift to remove the drilling fluid from the well. The Standard Oil Company uses the formation tester extensively, in lieu of

the method of setting and bailing or swabbing casing that [fol. 529] I have just referred to. The advantage of the formation tester over the earlier method is that, although we may examine core samples and think that they contain either oil or gas, we may not be certain. So, therefore, we may have set a string of casing and the formation would not be productive. If that occurs, we just either go on deeper or abandon the well. It means that I would have set a string of casing that we have to leave there, and also that in continuing our well we would have to drill with smaller pipe or drill a smaller hole.

The trip valve in the Johnston device is opened by a go-devil, which I believe is a valve. I would define a valve as an apparatus to permit the ingress of a fluid. I don't see where a valve is a device that can be opened or closed to control the passage of fluid. During the time that this trip valve is in the pipe, before the go-devil is operated, it is a complete barrier to the passage of fluid, and when you drop the go-devil down the trip valve is no longer operative; so that it is either capable of performing no function or else it is a complete barrier or stop in the pipe. It serves as a valve that you open to permit the ingress of fluid; but you can't close it to prevent the fluid from passing back out of the pipe. I don't know what you refer to when you speak of the use of a barrier in a pipe to keep the pipe dry while it is going into an oil well and to be broken by a go-devil when desired. To my knowledge I never heard of a go-devil being dropped into a drill pipe or a pipe in a well before these sand testers came out. I don't know whether that was something new that was devised for use in sand testers or not.

[fol. 530] Q. Now, as you understand this Johnston tester, can the main valve be opened or closed without moving the pipe, if the packer is properly seated?

A. By that do you mean without moving the entire string of drill pipe?

Q. Oh, no. I mean by lifting on the upper end of the pipe or lowering at the upper end of the pipe.

A. Certainly. It can be closed by the seat giving way.

Q. I said, if the seat holds out and the packer is properly seated on it.

A. You would have to relieve at least some of the weight of the drill pipe.

Q. You would have to lift up on the drill pipe to close the valve, would you not?

A. The main valve?

Q. Yes.

A. No. The spring would close it.

Q. How would the spring close it? Now, you just tell us that.

A. I would picture the spring nut—we would have a string of drill pipe in the hole, with a certain amount of weight given to—I am assuming that the packer is set on the seat. Our drill pipe is in the hole and we give it a certain weight. By giving it weight we flex the drill pipe. I cannot imagine any string of drill pipe being given weight and still remain in perfect perpendicular. So that you pull up on your drill pipe as you are unseating or closing the main valve. That takes some of the spring out of it until such time as the weight removed has been sufficient to allow that joint operation to act and close your main valve.

[fol. 531] Q. You think the spring actually pushes the drill pipe up in the well?

A. I do not.

Q. Well, the drill pipe has got to move up to close the valve, hasn't it?

A. But you can see, if you have a little bend like that and straighten it out it would not lift—the drill pipe—

Q. How would you straighten it out?

A. The spring would have sufficient force to do it.

Q. Wait a minute now. You have got a bend in your drill pipe. How is the spring going to straighten the bend in the drill pipe?

A. The thing is that you have a strain on the end of your drill pipe at the top, and you are tending to straighten that drill pipe out.

Q. So you are holding the valve open?

A. The weight of the drill pipe prior to taking it up has been holding it open.

Q. The only way that it can close is for the valve head to move up in the well; isn't that right?

A. That is right.

Q. And that valve head can only move with the drill pipe, because it is an integral part of the drill pipe?

A. Surety.

Q. Therefore the only way that the spring could move the valve head up would be by pushing the whole integral structure forward, that is, the valve head and the drill pipe; is that right?

A. I can't see that.

[fol. 532] Q. How would you get the valve head to move up by straightening out the drill pipe?

A. You would have relieved the weight sufficiently upon it so that the spring can act on it.

Q. What do you mean, act on it? Does it push it up the hole?

A. No, it does not. I have never been down there, so I can't say what happens, but whether the packer has a certain tendency to come up out of there or not I don't know.

Q. The spring is pushing the packer down, isn't it? The tendency of the spring at the under side of the spring, is to push the packer down?

A. That is, it also tends to push the drill pipe up.

Q. In order for the packer to open the valve, the packer has got to give way and move down, isn't that right, or the seat give way, whichever you want to call it?

A. I don't believe I understand that question.

Q. If the packer stays firmly seated and the seat holds, then the only way you can close the main valve in the Johnston device is by having the valve head move upward?

A. Yes.

I recognize Figure 1, entitled "Johnston Formation Tester," which is Exhibit B to the defendants' interrogatory answers, as a drawing of the Johnston tester that I have been referring to. The part marked "Main valve 41" is what you and I have been talking about as the valve head. That is the head on the main valve. And the seat is indicated on this drawing as seat 40. This valve head is integrally tied, so that it must move with the drill pipe, and can't move independently of the drill pipe. The valve seat, on the other hand, is connected with the packer, and [fol. 533] the packer assembly with the valve which slides up and down on the other part, and I would say that in order to open the valve you would have to compress that spring. The main valve is opened by downward movement of the drill pipe, which causes the main valve head to move away from the seat by downward movement of the drill pipe,

and that would happen whether the spring was there or not.

Q. You close the valve by lifting the drill pipe, which pulls your valve head back up?

A. It makes a seat there.

The Court: Why does raising the pipe pull the valve head back up?

A. Because this is on a mandrel. I think if we had a working model—

The Court: Would the answer be that it integrally connects?

A. Connects to this portion here.

By Mr. L. S. Lyon:

Q. The drill pipe, therefore, would pull that valve head up, whether the spring was there or not, wouldn't it?

A. If you pulled on it enough.

Q. Is it your testimony that this spring forces the drill pipe actually up the well to close this valve, or do you have to lift on the drill pipe to close the valve?

A. I would say that you would have to lift on the drill pipe to close the valve.

The springs on these testers vary with different sizes of spring. I think in the small tool it requires, in the 3-inch tool, about 6500 pounds to compress it, and in the larger one about 19,000 pounds. A 5-inch drill pipe will weigh 25.2 pounds per foot, the pipe that we use. We [fol. 534] use 5-inch drill pipe sometimes to a depth of 8,000 feet or more, and it is on testers run with this size and length of drill pipe that we use the large springs.

Q. Therefore, what percentage of the weight of the drill pipe is represented in the power of this spring that you have referred to?

A. Probably not very much.

Q. Well, how much in rough figures?

A. Well, it is 8,000 feet and it weighs 25.2 pounds per foot.

Q. Would that be 1 per cent or  $\frac{1}{2}$  per cent or what?


A. I haven't a paper and pencil handy to figure it out.

The Court: 8,000 times 25 would be 200,000.

A. Say, it takes 20,000—

The Court: 20,000 is one-tenth. That couldn't be.

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By Mr. L. S. Lyon:

Q. Anyhow, without stopping to calculate it, you don't seriously want the court to understand you to say that this spring is strong enough to pop that drill pipe up the well or push it up the well?

A. To push the drill pipe up, no. I didn't intend to convey that impression, that it had strength enough to push the drill pipe up the well.

This main valve cannot be closed unless this valve moves up the well in normal operation, and it can't move up the well unless the drill pipe moves up. The drill pipe moves up or this part moves down. In the normal operation of closing this valve the packer does not move down. It stays still. I don't believe I am qualified to answer as to why they have a spring on this Johnston tester. I think that the spring helps, or it regulates the tension, in the first place, that you have to put on, or the weight that you have to put on, to open this main valve, the [fol. 535] weight that you have to put on it. One of the reasons, I think, it is put in there is to resist any opening of the main valve while the device is going into the hole. It does that. I think perhaps the springs are the same for all jobs on a certain sized tool. The strength of the spring can be regulated with the tension nut. I think that it would probably be true that you set up the tension on the springs to give a greater power or a greater force, tending to keep that valve closed for deeper wells. It isn't a fact that in the normal operation of the Johnston device the main valve does not open going down the hole. I should say that it does open quite frequently. That is not the usual thing that happens, but I say I have seen it happen in a good many instances.

By the Court:

Q. Do you think that the use of the spring is to prevent the main valve from opening as it is going down?

A. To prevent it, with a minimum amount of weight, of course.

Q. That is, from opening accidentally? As the drill pipe is being lowered they don't intend that the main valve shall be open at that time, do they?

A. Well, your Honor, I believe, if you will allow me, we really have no control over that main valve as we are running in the hole.

Q. I assume that you don't but you do want it open as it is going down or do you want it closed?

A. It really makes no difference to us or to the test with the trip valve in here. The function of this main valve is to trap the sample.

By Mr. L. S. Lyon:

Q. Why don't you leave the spring off?

[fol. 536] The Court: I have an indistinct notion but it seems to me that the function of that spring is to keep the main valve closed as the drill pipe is going down because, when the packer is seated, then the full string of pipe is lowered. And that opens it, doesn't it?

A. By the same token, your Honor, the giant spring would keep it closed coming out.

Q. Would keep it closed coming out?

A. Yes. So that you have an entrapped sample.

Q. But it is closed coming out because one part is pulled up against it?

A. Pulled up against it; yes.

Q. And the spring resists that, doesn't it, or does it?

A. No.

The Court: All right.

By Mr. L. S. Lyon:

Q. Let's get it clear now. When you are pulling this tester out of the hole you are actually pulling up against this main valve?

A. Yes.

Q. And all this packer and everything else hangs on that main valve head and is pulled up by the main valve, is that right?

A. Well, I don't know.

Q. You can see it right there, can't you, in the drawing? In other words, the part that you rely on in this device to pull this packer out of the well when you pull the device out of the well is this main valve, isn't it?

A. Is this not all an integral part of it?

Q. This is all slideable, isn't it, on this part that carries the valve head? All this structure here is all slideable [fol. 537] and it is all urged downwardly by this spring, is that right?

A. Yes.

Q. So, therefore, if something happened to cut away this main valve, you would leave that packer in the hole, wouldn't you?

A. I have never seen it happen.

Q. But you can see, if something did cut that main valve head away, it would stay in the hole because there would be nothing to pull it out? Can you see that from the drawing?

A. Well, I don't know exactly what you are getting at there, Mr. Lyon.

The Johnston main valve is frequently opened while the device is being run into the hole, but usually it does not open. The way we tell whether it has opened or not is that we know how much weight is required to open that valve against the hydrostatic head, and, if we give it the full weight of the drill pipe to spud through a tight place, most certainly we would assume that the valve is open. The nature of the main valve is such that it will open under such conditions. We take precautions in drilling our wells or preparing them for these sand tests to guard against the main valve opening under such conditions by running a trip valve in. We as operators usually prepare our wells by putting a reamer on the bit so as to be sure that the hole is out to gage and that there are no irregularities in the hole before we run one of these sand testers. That is done for the purpose of being sure that the device does not hang up but has a clean, true and accurate and full-sized hole to go in. But I have seen plenty of holes where the device had to be spudded. The [fol. 538] usual operation in our wells, in the Standard Oil wells that we are drilling with our own crews, is to take every precaution to see that the tester does not hang up going down the hole. These precautions are taken because it is good drilling practice to always keep your hole in good condition and good shape. One doesn't always know what condition the hole is in. We wouldn't run a tester in a hole that we knew was in bad condition, because it would not go down; there is no use running it in the hole if it won't go to bottom. We specially examine the lower portion of the fluid, the fluid that is closest to the bottom. That fluid is not necessarily the fluid that has been entrapped below the point where the trip valve is located and above the main valve. As a rule we usually examine the fluid just above the tool. That is our usual practice. Yes, we

examine the fluid that is below the trip valve and that is in the tester. We also take into consideration and rely for examination on the fluid that is recovered in this tester and entrapped and brought out of the well below the point at which the trip valve is positioned. If I had to choose any particular part of the fluid that is recovered in one of these samples and rely on it alone, I would take, as nearly as I could, the last fluid that came into the tool; that would be the fluid that was down right at the bottom. In a deep well it is not unusual to put the trip valve a thousand feet above the tester; that is often done. If a sample is recovered extending 500 feet, that wouldn't be unusual, although the trip valve was a thousand feet above the tool. In that case all of the sample that was recovered would be below the trip valve. Another thing, when the trip valve is positioned a thousand feet above the tester, in the instances I have been referring to, the tester is actually [fol. 539] lowered down the well for the first thousand feet without any trip valve on the pipe.

Q. During that time don't you take precautions to see that the main valve does not open and fill that drill pipe with mud fluid?

The Court: I don't know whether I am clear on the question.

Mr. L. S. Lyon: I think the witness understands me. They make this pipe up at the derrick and lower it, that is, put it together and gradually lower it. If they are not going to put the trip valve in until they have got a thousand feet of pipe on top of the tester, then during all the time they are going down for a thousand feet they are running the tester in without the trip valve.

The Court: If a thousand feet above the main valve a leak occurred, it would get into your testing substance, would it not? Your trip valve would not stop that or would not prevent that?

A. No, your Honor. If the drill pipe were full of fluid, you wouldn't expect any foreign mud fluid from the outside to go in.

Q. What I am getting at is this: As I understand the testimony, the trip valve insures purity in your testing substance?

A. Yes; it does.

Q. Very well. Suppose that there were a thousand feet between the trip valve and the main valve, there would be the same danger in that thousand feet that there is in any other thousand feet of deleterious or foreign substances getting into the pipe, would there not?

A. But we purposely fill that drill pipe with fluid.

[fol. 540] Q. You don't do that to begin with, do you?

A. Yes.

Q. As it is going down?

A. As we lower the drill stem we purposely fill that drill stem with fluid.

Q. What kind of fluid?

A. Either water or mud fluid, drilling fluid.

Q. That is news to me. I thought that drill pipe was clear, that it was full of air only.

A. The purpose of that fluid is to provide a cushion. That is the way we explain it. In other words, not only a cushion but we have—or the drill pipe is collapsible with pressure exerted from the outside, and, if you have too much of it in the hole, it will collapse by the weight of the mud fluid outside if you haven't any fluid inside of the pipe.

Q. Yes. I can see that. Does this best steel pipe ever collapse?

A. Yes; it does.

Q. 6-inch or 8-inch pipe?

A. Yes, sir.

Q. You have got to have something in it, then, to prevent it from collapsing?

A. Yes, your Honor.

By Mr. L. S. Lyon:

Q. Only in deep wells that is true, isn't it?

A. Of course, it depends upon the make or the grade of steel that you are using.

By the Court:

Q. Suppose it is a deep well. You must get that substance out of it before you take your test? I will call the [fol. 541] substance the material that you are going to test and that you find in this "rat-hole." You must eject that substance out first, must you not?

A. It goes up through the trip valve and is the substance above your entrapped sample. For instance, if we fill a thousand feet of drill pipe with mud fluid, above that thousand feet we would have a trip valve.

Q. Come over here. Here is your drill pipe and that is your packer, isn't it?

A. This is the packer.

Q. Your main valve is up here, isn't it?

A. This is the main valve here.

Q. Where did you say the main valve is?

A. This is your main valve here.

Q. Do I understand that between the main valve and the trip valve—

A. We have a thousand feet of drill pipe filled with either mud fluid or liquid of whatever kind we have.

Q. What you want to do is to get the substance down at that perforated point to make your test?

A. We want it to come in through that perforated nipple and up through this valve, and after we have secured what we consider a desired amount, then, of course, you see the main valve will enclose and entrap it.

Q. Yes; I understand. What do you do with the substance that is here, that you do not want to test, when you are getting that from down there up here?

A. When we have recovered it we just disregard that. After we have made our test, if we put a thousand feet of fluid in there in the first place, after making the test and withdrawing it, we may have 1,500 feet of fluid in the drill pipe. So then we consider that 500 feet of foreign material has entered.

[fol. 542] Q. Which 500 feet is it?

A. It would be the bottom 500 feet, we would assume.

This proposition of putting a certain amount of fluid in the pipe above the valve is a safety factor for testing in deep wells. It is not used in a shallow hole at all.

The Court: Even so, it seems to me that there would be difficulty in preserving the identity of the contents of the "rat-hole."

A. There really is not, your Honor.

Q. There is not?

A. No. They are usually quite easy to identify. You have a certain kind of a mud fluid that you put in there

and, although you may have some contamination at the juncture of the two fluids, I think that the other fluid would probably be representative of your cognate fluid.

By Mr. L. S. Lyon:

Q. If you put a thousand feet in there on going down the well and had only a thousand feet when it came out—

A. The weight of the mud is sufficient to withhold the fluid from entering.

I believe I can say that the 125 times that I have seen the Johnston tester operated were all on the Standard Oil Company wells. I was there as an engineer, required to be present on the test so that I could determine or witness the results of the test. The Johnston Company also has a man present on these tests. As to the number of men usually present in making one of these tests, as a rule there will be five men on the drilling crew, one Johnston operator, perhaps a drilling foreman, and an engineer. All of the men on the rig, excepting the Johnston man—I am referring now to formation tests and not to shut-off tests—would probably be company men. The part these company men, including myself, take in making the tests is that we watch the test, observe the blow, and use our judgment as to when we believe the test will be conclusive. If we think that the results will be satisfactory, that the blow has been indicative enough, that sufficient cognate fluid or gas has entered, we will say that that has been enough and we will start pulling the drill pipe and tester out of the hole. Our company crews run the machinery and make up the pipe to lower this apparatus into the well. The oil company's men set the packer under the supervision of the Johnston man. The company's men and the Johnston man cooperate in doing this work, in setting the packer. I think all of the actual physical steps that are taken at the top of the well, that is, the manual steps, are taken by the company's men, but the mental steps are taken cooperatively by the company men with the Johnston man.

The company or the contractor, as the case may be, furnishes the drill pipe. Johnston furnishes nothing except the tester, and perhaps a sub joint used in connecting the drill pipe to the tester. Of course, the tester includes the

packer, and occasionally the tail piece. But the Johnston Company does not furnish the drill pipe or any of the equipment that is used to lower and raise pipe in and out of the well or any of that equipment. I think that these testers that are lowered down on the drill pipe, with a valve on them, that can entrap samples and bring them out, instead of setting a string of pipe and bailing or swabbing, saves a lot of money for the oil companies. The Standard Oil Company has adopted that quite generally.

[fol. 544] I am acquainted with Mr. Linville, but I don't know Mr. Bivens. Mr. Linville was not the representative of the Johnston Company who participated in these tests on many of the wells that I have referred to with the Johnston Tool. I think there was only one test he was present on, or two at the very most. He was not stationed in the northern district at the time. I don't recall that Mr. Bivens was on any of the tests. I do recognize Mr. Linville as having been on at least one testing job performed for the Standard Oil Company of California.

Redirect examination.

By Mr. Wright:

I testified that the spring was used to hold the valve seated or closed. It does of necessity hold the valve closed while coming out of the well as well as going into the well. If you remove the spring from the main valve and endeavor to raise the device from the well, after you had overcome the hydrostatic head, it would probably mean that the valve would open. There would be a hydrostatic pressure upward on the packer after you came out of the hole. I believe that hydrostatic pressure operating upon the packer would be sufficient to raise that lower member up off of the valve so that it would open, if the spring was left off. If the spring was removed, the main valve would open of its own accord when the device was lowered into the well.

The Court: It would what?

A. It would open running in the hole of its own accord because the drill pipe would be empty, so that a certain buoyancy would be applied to it, and it would have to overcome the hydrostatic head going down, and that would be sufficient to open the main valve.

Q. Then, it won't have any tendency toward either opening or closing the valve, will it?

A. If you had say only a hundred feet of fluid in that drill pipe, you would not have sufficient weight inside of there to help you; but, if you had a normal amount of fluid in the drill pipe, it would do so.

Q. The deeper the well the more the hydrostatic pressure? That is all the difference that makes, isn't it? It doesn't [fol. 548] make any difference in the direction the hydrostatic pressure is exerting itself, is that right?

A. That is right.

Q. Now, where do you get any force as you are coming out of the well due to hydrostatic pressure that tends to either open or close the valve?

A. Why shouldn't you get a force tending to open it?

Q. Do you think it would tend to open it?

A. I believe it would.

Q. Are you sure about that or is that without having had a chance to fully consider it? You said a moment ago that the packer would not tend to either lag behind or speed up as compared with the drill pipe. Now, in order to open the valve, it has got to tend to go faster than the drill pipe, as the parts are slideable one on the other? That is correct, isn't it?

A. Yes.

Q. You don't really think there is anything while you are coming out of that well that causes that packer to tend to speed up faster than the drill pipe, do you?

A. We have a certain amount of fluid in the drill pipe that is exerting a certain weight down as we are pulling out. We have pressure, due to fluid pressure, exerting pressure against the packer. Now, why couldn't that open the valve?

Q. The fluid pressure on that packer and all the parts in there is the same from all directions, isn't it?

A. Yes.

[fol. 549] Q. Then, the only force that could change that would be due to the lifting of the pipe going out of the hole; the movement up the well, which would give you an added force, isn't that correct?

A. Which would tend to open the valve.

Q. That would tend to push the packer down the well, wouldn't it?

A. Yes.

Q. And when you push that packer down the well you are doing just what the spring does? It would tend to keep the valve closed, if you will stop and think a minute, isn't that right?

A. I don't see it.

Q. What does the spring do on that main valve? It tends to push the packer down the hole, doesn't it? You had better check it up. This spring tends to push this packer down the hole and to push this valve seat down against the valve head to close the valve?

A. Yes.

Q. Then, the force that we are talking about, that is exerted when the tool is being pulled out of the well, pushes that packer down and tends to close the valve, doesn't it, and not open it?

A. The spring tends to keep it closed.

Q. Any force that tends to push the packer down the well tends to close the valve, doesn't it. Isn't that true?

A. I don't know.

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[fol. 550] FRANK D. GESS, called as a witness on behalf of defendants, being first duly sworn, testified as follows:

Direct examination.

By Mr. Wright:

My name is Frank D. Gess. I reside in Bakersfield, California, and I am by occupation a drilling foreman. I am now employed by the Union Oil Company and have been engaged by that company as a drilling foreman since 1932, and prior to that time as a driller. I have been engaged in or connected with the oil drilling business continuously since 1917. I have during the period of my occupation in the drilling business had occasion to learn of quite a number of various devices used in the drilling of oil wells, and have become familiar with them. I have become familiar with the conditions which are met with in the drilling of an oil well, especially a rotary drilled oil well.

My attention is called to Plaintiffs' Exhibit 9. I have examined and inspected that device and have become familiar with its members and parts. I have also examined the drawings of the tool.

[fol. 545] Q. If it overcame the hydrostatic head, would it open?

A. You see, you have a packer here that is quite a large packer and you have empty drill pipe. If you can imagine taking a long glass tube that is empty, or if you would have your finger on it and have it full of air, it would require some force to force it down into water; and to overcome that force it would be sufficient to open that main valve and allow the fluid to enter the drill stem.

By Mr. Wright:

Q. Have you ever run the main valve without the spring and observed exactly what you have stated to the court?

A. Yes; we have.

Recross-examination.

By Mr. Lyon:

That spring is actually to keep the main valve closed coming out of the hole. Under normal conditions, if it keeps the valve closed coming out it will keep it closed going in.

Q. Will you explain what you mean by this hydrostatic pressure tending to open the valve against the force of this spring?

A. Did I say against the force of the spring or without the spring?

Mr. Morgan: He said without the spring.

By Mr. L. S. Lyon:

Q. It is bucking the spring?

A. It is bucking the spring but the particular instance that I had reference to was without a spring.

Q. You think that the hydrostatic pressure, either going in or out of the well, would open the valve if it wasn't for the spring, do you?

A. I know that it would.

[fol. 546] Q. In both cases?

A. I know that going in without a spring the valve would open.

Q. Where does it exert the pressure to open the valve?

A. It would probably exert the pressure on the packer, the same as if you were seating the packer?

Q. Hydrostatic pressure is effective in all directions, isn't it?

A. Yes, sir.

Q. Which way is it going to move that packer? Is it going to move it up or down or sideways?

A. It is going to resist the passage of the packer.

Q. It is also going to be on top of the packer, isn't it?

A. That is right except that you have drill pipe empty and you have a certain buoyancy being applied by that fluid. You are overcoming that.

Q. Wait a minute. The packer is not in the drill pipe, is it?

A. The packer is on the drill pipe and is attached to it.

Q. This hydrostatic pressure that could apply to the packer is going to apply from all directions, isn't it?

A. Equally in all directions.

Q. How is that going to tend to move the packer in any particular way?

A. Because you are overcoming the buoyancy of the dry drill pipe by forcing it into fluid.

Q. Then, it is the fact of lowering the device that would cause the pressure to build up against the packer and let the packer unit slide so that the valve would open?

A. That the main valve would open.

[fol. 547] Q. And this spring is on there to keep that shut?

A. The spring is on there to help keep it closed.

Q. Coming out of the well which way does the hydrostatic pressure act on the packer?

A. The same way. It is pushing up on it just as well as it is in all directions.

Q. You are pulling the pipe out at this time? You are pulling it out, aren't you?

A. If you had a packer that took up the full diameter of the hole, you would have such a condition. However, you do not run a packer in a hole that takes up the full diameter of the hole.

Q. What is this by-pass in the packer for?

A. The by-pass in the packer is to equalize the pressure above and below the packer.

Q. If you have the pressure above and below the packer equalized as you pull out of the well, isn't the packer going to drag or is it going to tend to jump faster than the drill pipe?

A. It is just going to come right along with it.

"Q. Will you state whether or not in your opinion that device is a practical, operative device for the purpose of obtaining a sample from a well?

Mr. L. S. Lyon: I object to that, your Honor, for the reasons that have heretofore been stated and also on the ground there is no foundation laid here.

The Court: I think the witness may describe the operation of it, but it doesn't seem to me that to record an opinion [fol. 551] as to its practicability would be particularly responsive to the issues.

The Court: Objection sustained.

Mr. Wright: May we have an exception, your Honor?

The Court: Yes.

By Mr. Wright:

Q. Will you state whether or not you believe that that device, if used in a well containing drilling fluid, would or would not leak?

Mr. L. S. Lyon: I object to that; on the ground that there is no foundation laid. The witness has not shown that he has had any experience with such a device at all or made any trials with it or ever saw it operated, and I think his answer would be nothing more than what his own name implies in this case.

The Court: Well, he says he is a driller. A driller knows all about not only drilling the well but how to get it out of trouble, doesn't he?

Mr. L. S. Lyon: I think they think they do, but whether they would know whether a tool would leak or not, just from looking at it on the courtroom floor, I don't know.

The Court: But it seems to me to be subject to the same comment that I made before, that is, it calls for his opinion when he hasn't been qualified as one competent to give an opinion. But I see no objection to your asking him if he has operated one of the tools."

I have run testing devices in oil wells. I have run the Johnston and the Halliburton and the Benjamin Franklin testers.

The Court: The what?

[fol. 552] A. The Benjamin Franklin.

By Mr. Wright:

Q. The Halliburton device that you referred to, was that the "J" tool?

A. That was the "J" tool, yes.

Q. And not this device which is Exhibit 9?

A. No. That is right.

From my observation of Plaintiffs' Exhibit 9 and also from my inspection and study of the drawings, I know how the Simmons device works. The Simmons device is operated on the bottom of a string of drill pipe. You set the packer by turning it to the left, and you open the valve by turning it to the right. The number of turns of the drill pipe it would take at the top of the well to turn that valve on at the bottom of the well would depend on the depth of the well and the spring of the drill pipe. In a well 5,000 feet deep I would say it would take—it wouldn't be safe under one full turn of the drill pipe to open it; and the same amount to close it. There is a chance of the tool rotating going into the hole, depending upon the conditions found in the well. This is caused by irregularity of the formation. The hydrostatic pressure which would exist in a hole 5,000 feet in depth would be different in different fields. It would be almost impossible for me to state. It varies with the fields and the weight of the mud.

The purpose of making a test in a well is to obtain samples from the formation, and from these samples you determine what your course of drilling will be or whether or not you should set casing. Oftentimes we have made tests that we thought were O.K., and there is a possibility, I should say, of making a test, and thinking it would be O.K., which it would not be. I have had that actual experience. Relying on the test, we went to the expense of setting a string of casing. It is necessary in most all cases to be able to maintain or re-establish circulation in devices used in oil wells. We never like to run any kind of a tool in a hole that we cannot establish circulation through near the end of the string of drill pipe. In case of blow-outs, or if you are extracting something out of the hole that should become fouled or lodged, the pump pressure will give you a better chance to free it. In my testimony that I have just given I am assuming a condition where the device is not resting upon a shoulder or firmly attached to the bottom of the hole, but is coming out of the hole. From

my examination of Plaintiffs' Exhibit 9, my opinion would be that if you—on a deep hole, if you attempted to run that tool you would have to set your tool so close together that, to turn your drill pipe—you have got to turn your drill pipe to open it—that you would probably, on a shoulder, in formation, with the packer setting on a shoulder, in all probability you would rotate your packer on your seat, which would probably destroy the seat and you wouldn't be able to get a test on a deep hole. If the valve members were set loosely enough to obtain a sufficient freedom of movement so they would not stick, I believe you would get a leak there, a leak between the plates, I believe, would take place. I do not believe that that tool, Plaintiffs' Exhibit 9, would under normal conditions makes a satisfactory test.

I have never been in the employ of the defendant company, either the Honolulu Company or the M. O. Johnston Company. I was not hired by them to come here as a witness.

[fol. 554] Cross-examination.

By Mr. L. S. Lyon:

Plaintiffs' Exhibit 9 might possibly work at 4,000 feet. It would be a question whether the tool would work there. The tool is questionable, whether it would make a test or not. It might work at 2,000 feet. The tool would probably make a test O. K. in a shallow hole for a shoe test through casing, where you haven't much chance of any obstacles turning the packer and causing the tool to open up; but running it out in the open formation, in my opinion, it wouldn't be practical at all.

Q. Would there be any difficulty about the open formation if you followed the practice that the previous witnesses referred to of running a reamer to true up the hole?

A. That is true. It is done. But oftentimes the hole will slough on your round trip out of the hole.

The Court: Will do what?

A. Will slough off the hole and cause the tool to hit.

By Mr. L. S. Lyon:

Q. But if you have got a good hole you might run it all right.

A. Well, no walls of any hole are absolutely perfect; we know that.

I do not make the positive statement that this tool could not be operated. It might possibly be operated. You would have to have the best conditions. I said it might operate in casing, in shallow holes, in all probability the packer would work. I understand there is supposed to be a valve on there. The design of the valve is not the only problem with the tool. I don't like the possibility of the tool opening up going in the hole. You would have to study the tool in order to be able to fit that. I couldn't tell you how [fol. 555] to do it right now, but it might be done. You could probably figure out a better valve.

Q. I am not quite sure that I understand this opinion that you have given. Is it your opinion that it is going to be too hard to turn that tool, or that it is going to turn too easy.

A. To open the tool, you mean?

Q. Yes, to open the tool. Is it going to turn too hard or too easy?

A. Under pressure, if you are running it deep, you understand, my opinion is that you would have to set the tool up, place it up so tight that probably you would have difficulty in opening it, and in attempting to open it you would probably turn your packer on the seat.

Q. That wouldn't happen if you didn't set it up too tight?

A. No, it wouldn't.

I don't know whether any grease is being used on this valve. I don't see why there couldn't be. Of course I imagine it would be properly greased.

Q. You are used to using these high pressure valves, aren't you, like the Nordstrom valve?

A. Yes.

Q. That stands terrific pressures with the valve off the seat without leaking, does it not?

A. Yes.

Q. Due to a film of grease?

A. Yes.

[fol. 556] Q. Is there any reason why you couldn't put a film of grease on this valve?

A. Well, the Nordstrom valve, in that you are closing the ports by turning the core completely past the ports. It is a cone-shaped core. It isn't the same as that at all. It wouldn't be a comparison, in my mind.

Q: But you naturally, if you were going to use this device, would put grease on the valve, wouldn't you?

A. Probably we would, yes.

Q. And you could turn it then, couldn't you?

A. You could, yes, you could turn it.

I have never tried to operate Plaintiffs' Exhibit 9.

HENRY T. DEAR, called as a witness on behalf of the defendants, being first duly sworn, testified as follows:

Direct examination.

By Mr. Boyken:

My name is Henry T. Dear. I reside in Bakersfield, California, and am by occupation division manager for the M. O. Johnston Oil Field Service Company. I have been employed by the Johnston Company since July, 1933. I am familiar with the operation of the Johnston testing device and have seen these Johnston devices operated approximately 1500 times.

I entered the oilfields in 1918 as a roughneck on a rig, until November, 1919, at which time I started drilling, and was continually employed as a driller up until April, 1930. From April, 1930, until July of 1933 I was drilling super-[fol. 557]intendent and an independent operator in the Long Beach area.

Surface water is classed as any water that you might encounter as you drill down, until such a time as you would strike a productive sand, and it might be an artesian flow or fresh water of that nature. It does not necessarily mean that the water is on the surface. As to how far water may be below the surface and still be properly termed "surface water", that would depend upon the structure of the field. In some places water is classed as surface water as deep as 3,000 feet, owing to the nature of the construction of the formation.

I have attempted to operate the Johnston tool without the trip valve, but the operations were not successful. In holes where we had tool joints that didn't have a clear passage through them, and I have in mind the Doheny Stone drill pipe, which is flush joint drill pipe and has somewhat square

shoulders inside. I never conducted one of those tests under my supervision, but I have run a considerable number of tests where the trip valve was improperly seated, that is, the seat ball wasn't ground in on the seat, and in going in the hole strike obstructions where we open the main valve, and this fluid would leak by the trip valve and cut it out, and we would be unable to open the trip valve, and on removing it from the hole we would find that the trip valve had not opened, but the fluid had cut by the seat. One of these instances was where Doheny Stone drill pipe was used. I have drilled with Doheny Stone drill stem for two years. It is called flush joint drill stem. That is, it has no collar on the outside of the drill stem, and the threads are on the in-[fol. 558] side. Those are connected with pins; you have a pin up and a pin down, and you have a square shoulder that your rod would hit as your rod drops through this drill stem. That is to say, there are projections on the inside of the drill pipe. The go-devil travels at a considerable rate of speed, and it would encounter one of these projections and it would become crooked, and therefore would not follow on down with enough force to trip the valve. For this reason we dispensed with the trip valve in connection with this Doheny Stone drill pipe.

As to the other instances that I mentioned, where the trip valve cut out, some of these tests were made by me. The reason the trip valve did not operate was because, as the packer traveled in the hole, it would strike obstructions and open the main valve. That would throw the pressure of the fluid against the trip valve, and, it not being properly seated or possible to be closed against any substance that might have been in there, to keep it from getting a positive seal, this fluid would leak by the trip valve and get in the chamber above the trip valve as it was being lowered in the hole.

The Court: Would get in the chamber above the trip valve?

A. Yes.

The Court: I thought it leaked down from above.

A. It came from below the trip valve, past the bottom seat. That was a defective trip valve. I did not obtain a test where the trip valve did not seat properly. I explain the cooperation between the trip valve and the main valve on the Johnston tool as follows: The main valve entraps

the sample as the drill pipe is moved from the hole. The [fol. 559] trip valve opens and allows the sample to flow into the drill pipe. In other words, as you go in the hole the main valve can open and close as many times as you would strike an object to cause it to open, and it would have no effect on fluid entering the drill pipe, because the trip valve, its function is to keep fluid from entering the drill pipe from below while going in the hole. It would make no difference in the operation of the Johnston tool if the main valve opened and closed while the tool was being lowered into the well. I would not consider that the Johnston tool was an operative commercial tool without the trip valve. The Johnston Company tests oil wells for various oil companies in California. I have never successfully made any tests for oil companies without the trip valve inserted in the Johnston tool. No tests were made without the use of the trip valve, to my personal knowledge. I have testified there were about 1500 made in my division. I am familiar with the operation of the giant spring in the Johnston device. The purpose of that spring is to close and keep the main valve closed while coming out of the hole with an entrapped sample. If we didn't keep the main valve closed while coming out of the hole—to allow the fluid to enter—it would destroy the sample.

The Court: Right there. The sample, however, is not secured by the trip valve from the intermixture with other fluids, is it?

A. No, your Honor. But if we were running a test and it indicated that there was no flow in the well, and if we came out of the hole and there had been a lot of drilling fluid enter the pipe that we couldn't account for, it would make the [fol. 560] test inconclusive, because we couldn't explain where all this mud came from.

The main valve of the Johnston device is attached to two members. The seat of this valve is on a movable member, and this movable member is in turn attached to the packer below, and when you pull off the seat if you don't have this giant spring there to assist in snapping the valve shut and keeping it shut, the rebound from pulling that packer off of the seat would again open your main valve, thereby letting the fluid enter, and once it started to enter, that hydrostatic head, it would possibly cut the valve out, and wouldn't close until such time as it was practically equalized. In

withdrawing the tool from the well, in normal operation, never over 90 feet of pipe is taken off at a time. Such section of pipe is called a stand, and is approximately 90 feet. In taking off the first 90 feet of pipe in withdrawing from the well the main portion of the pipe moves downward. The reason for this downward movement is that this pipe is caught and held at the rotary table by means of slips. These slips seat around the pipe and against the rotary table, and in seating these slips the drill stem will hardly ever be found to hang perfectly in the center of the table, and it is impossible to set these slips without lowering the drill stem back some in the well. Without the spring on there, we would be pushing down with this packer, and that would in turn shove the seat away from the stem of the valve, you might say, thereby allowing the fluid to enter. If that occurred it would let an undetermined amount of fluid come in from the bottom, which would make the test not conclusive, because you wouldn't know how much you obtained from the formation [fol. 561] or how much you might have gotten in while coming out of the hole.

Upon opening this main valve we apply weight by lowering the drill stem and it takes, normally, from fourteen to twenty thousand pounds to press the spring downward and upon the main valve, and when you get ready to close it you begin lifting this weight off of the spring. That, naturally, takes place at the surface. And when you get a certain amount of weight off of that, that is, if you remove the weight to the point where this spring will overcome that weight that you have on it, it will snap this drill stem up and cause the valve to close.

The Johnston tool is always operated with this main spring in it. At times the trip valve is located at some distance from the Johnston tool. This is done in the formation testing where the hole is at such a great depth that they are afraid that the pressure might collapse the dry drill stem. For that reason they put a certain amount of fluid on the inside of the drill stem. And, in order for us to trip this valve, we place this valve above this fluid and this fluid that we put in there is in between the main valve and the trip valve. Normally the trip valve in a Johnston tool is close to the remaining parts of the Johnston testing tool. It is only on certain occasions that the trip valve is removed from the remaining portions of the Johnston testing tool. There are only two occasions for that, as I said, the one

Q. You mean you were never present when one was run?

A. No.

[fol. 573] M. O. JOHNSTON, called as a witness on behalf of defendants, being first duly sworn, testified as follows:

Direct examination.

By Mr. Morgan:

My name is M. O. Johnston. I reside at 1559 Grand View, Glendale, California. I am president of the M. O. Johnston Oil Field Service Corporation, one of the defendants in this case. This corporation defendant was organized in June, 1933. I came to California in May of 1930, and since that time I have been engaged in the testing business. During that period I have done formation and shoe testing. The type of tester I have used is the so-called Johnston tester which is shown here in the court room. I am the owner of a patent upon that device. The portion of the device to which I refer is the equalizing valve.

The letter which you call to my attention, directed to the M. O. Johnston Oil Field Service Corporation, dated February 9, 1934, bears the signature of myself and Frank O'Neill. Frank O'Neill is secretary and treasurer of my company. The signature on the letter is my personal signature, and not as president of the company. The approval is by Mr. O'Neill as secretary of the company.

(The letter last referred to was offered and received in evidence as Defendants' Exhibit O.)

You have called my attention to a contract dated February 9, 1934, purporting to be between the Johnston Formation Testing Corporation, Ltd., a California corporation, Gilson M. Jones and F. C. Van Deinse, as parties of the first part, and Mordica O. Johnston, party of the second part. I am familiar with the signatures to that agreement. Those signatures are the signatures of F. C. Van Deinse, Marie L. Rickert, Gilson M. Jones and then F. C. Van Deinse and my signature, M. O. Johnston, as an individual. The upper signature, John-

ston Formation Testing Corporation is signed for the company by Mr. F. C. Van Deinse as president. He was at that time president of that company.

(The contract last referred to was offered and received in evidence as Defendants' Exhibit P.)

The Mordica O. Johnston mentioned in that agreement just introduced in evidence refers to myself.

I am familiar with this agreement that has been handed me, which is dated February 25, 1935, and purporting to be signed by the Johnston Formation Testing Company, with the seal of that corporation, this letter or agreement being directed to me, and bears the signatures of the parties thereto. In the left-hand corner are the words, "Approved and agreed to: M. O. Johnston", which is my signature. The signatures of Van Deinse and Jones as president and treasurer, respectively, of the company are those of Van Deinse and Jones, who were at that time president and treasurer, respectively, of the corporation.

(The agreement last above referred to was offered and received in evidence as Defendants' Exhibit Q.)

[fol. 575] (Letters Patent No. 1,901,813 offered and received in evidence as Defendants' Exhibit R, subject to motion by the plaintiffs to strike.)

(Book of Exhibits, p. 448.)

(Letters Patent No. 1,842,270 offered and received in evidence as Defendants' Exhibit S, subject to motion by the plaintiffs to strike.)

(Book of Exhibits, p. 454.)

The document which you show me, entitled, "Contract," and purporting to recite that it is a contract between the Johnston Formation Testing Corporation, a corporation, organized under the laws of the State of Delaware, and the M. O. Johnston Oil Field Service Corporation, the defendant here, was made up in duplicate. Referring to the signature which appears at the end of this contract, Johnston Formation Testing Corporation, by E. C. Johnston, President, that is the signature of my brother, who is president of that company. The copy of this agreement is unsigned on the part of the M. O. Johnston Oil Field Service Corporation. I am sure that I signed the dupli-

cate of this agreement and forwarded it on to the other company in Texas, and that this copy which I now hold was then received by me from that corporation in Texas, bearing the signature of E. C. Johnston, as president.

(Defendants' Exhibit T for Identification.)

[fol. 576] (Patent No. 1,709,940, patented April 23, 1929, was offered and received in evidence as Defendants' Exhibit U.)

(Book of Exhibits, p. 460.)

My attention being called to patent No. 1,790,424, the date of issuance of said patent being January 27, 1931, I state that I am familiar with that patent. I have seen that patent several times, the disclosures there. There are points of difference between the device shown in this patent No. 1,790,424 and the Johnston device which has been shown here in the court room, the points of difference being that there is no equalizing valve and no trip valve shown in the patent, and the spring and the main valve shown in the patent is below the packer, while the main valve in the tool here in the court room is above the packer.

(Patent No. 1,790,424 was offered and received in evidence as Defendants' Exhibit V.)

(Book of Exhibits, p. 466.)

Mr. L. S. Lyon: Those patents, your Honor, were issued, one of them to E. C. Johnston and one of them to an Arkansas corporation, and I want my objection to go to the fact, in addition to the objections I have already made, that there is nothing extending from E. C. Johnston or the Arkansas corporation to the defendants in this case, no rights under these patents established.

The Court: Are these patents mentioned in the pleading? [fol. 577] Mr. L. S. Lyon: No, your Honor.

Mr. Morgan: I don't know. I will ask Mr. Wright.

Mr. Wright: It isn't.

The Court: Then what is their importance in the case?

Mr. Morgan: We claim, if your Honor please, that we are operating a device under a patent that has been issued. Now, as we see it, it doesn't make much difference whether we are using that device rightfully or wrong-

fully under a valid license agreement or how we are using it, so long as we are using a device which has been patented by someone other than the plaintiff in this particular action. And when we can show the connection between the device introduced in evidence and the device which has been described in the patent we feel that we have brought ourselves within that particular rule. We claim that the Johnston patent is a new and distinct invention. I have a case here, if your Honor please, which my associate has just called to my attention, the case of Corning et al. v. Burden, 14 Law Ed. 683.

As to Defendants' Exhibit T for Identification, which I have heretofore identified as the agreement entered into by and between my company and the Johnston Formation Testing Corporation, of which E. C. Johnston is president, I will state that there was a modification of that agreement entered into later. This letter which you show me, dated August 10, 1934, is the modification that I have referred to. The signature, M. O. Johnston Oil Field Service Corporation, by M. O. Johnston, President, is my signature; and the signature of Johnston Formation Testing Corporation, by E. C. Johnston and F. D. G. Park, [fol. 578] are the signatures of E. C. Johnston and F. D. G. Park, respectively.

(The letter last above referred to was offered and received in evidence as Defendants' Exhibit W.)

(The agreement previously marked Exhibit T for Identification was received in evidence as Defendants' Exhibit T.)

The document which has been handed me, and which is termed a license agreement, purporting to have been executed on the 1st day of April, 1935, is signed by E. C. Johnston, Blaine Johnston and J. L. Johnston, whose signatures are appended to that agreement. The Johnston Brothers Valve Corporation is a co-partnership. The name "M. O. Johnston Oil Field Service Corporation By M. O. Johnston, President," is my signature, and the seal thereon is the seal of the corporation.

(The license agreement last referred to was offered and received in evidence as Defendants' Exhibit X.)

As to the contract or letter, dated February 9, 1934, which purports to be addressed to the M. O. Johnston

the hydrostatic head of fluid. The tendency of that with respect to the valve here would be that it would force the fluid in between those openings and cut out the seat. In case of a leak the test would be negative or not conclusive. The torque in the pipe would affect the successful operation of the device. The twisting of the pipe in the distance between the top of the well hole and where the tool is would make it necessary at times to turn the pipe more at the top [fol. 565] of the well than the actual turn which is accomplished where the tool is located, because that turn at the top is not always transmitted directly to the bottom because you have a certain amount of friction in the well. You might say at any considerable depth it is not good practice, not considered good practice in the drilling industry to put very much of a strain on a drill stem when it is dry, that is, it is figured closely as to its collapsible strength or for pressure, and any great amount of twist in it might cause the drill stem to collapse. That twisting would be liable to occur with the use of the Simmons tool, Exhibit No. 9, and that would occur in either opening or closing. You have to rotate it to open it and rotate it in the opposite direction to close it.

The first form of testing tool that I ever heard of was the Johnston device. That was in about August, 1930, when Mr. Johnston contacted me in Long Beach in regard to running it on a test when I was superintendent for the James Oil Company.

#### Cross-Examination.

By Mr. L. S. Lyon:

If the trip valve in the Johnston device leaks and lets a substantial amount of drilling fluid into the pipe up above the trip valve, you are not able to open the valve when you drop the go-devil, because the go-devil won't travel through this fluid with sufficient force to trip this valve. The leaking of the trip valve caused the failures to get the tests by the Johnston tools, that I observed. The trip valve would open going in the hole and let in a great amount of fluid. As the main valve would open the fluid would travel up through the trip valve.

[fol. 566] Q. Then, if that trip valve leaks at all, instead of doing any good it does a lot of harm in the Johnston tool. is that right?

A. It proves to the operator—

Q. Just answer that question, will you, please, yes or not?

A. You say, if it leaks, it causes harm?

Q. Instead of good.

A. I couldn't say it causes harm; no.

Q. It prevents you from completing the operation, does it not?

A. It prevents you from getting a non-conclusive test. If I may explain it,—

Q. I don't want any explanation.

Mr. Boyken: May he explain it, your Honor?

The Court: Let him explain.

Mr. L. S. Lyon: If your Honor please, I have a right to cross-examine the witness.

The Court: If the witness wants to make an explanation, let him make it. Make your explanation, whatever it is.

A. I meant by non-conclusive that we would get an undetermined amount of fluid in as we went in the hole.

By Mr. L. S. Lyon:

Q. If you are unable to open this trip valve when you drop the go-devil, are you able to make a successful test with the Johnston tool?

A. No.

Q. And, if the trip valve leaks, you can't open the trip valve with the go-devil, can you?

A. No.

[fol. 567] By the Court:

Q. Just why?

A. Because this rod that we drop to open the trip valve, your Honor, won't travel through this fluid.

Q. The fluid that comes in through the leak, is that the idea?

A. Yes.

Where we are testing in these 7,000-foot wells or deeper and have to put in say a thousand feet of fluid to prevent the pipe from collapsing it is put in below the trip valve, and held there between the main valve and the trip valve. It is held from traveling up in the drill stem by the trip valve.

we didn't get but two gallons in the tool, the companies would not accept it as a conclusive test because they figure the amount of fluid that is below the packer and at the point where it is cleaned out, and they expect to get normally about that amount of fluid in the testing device where we run it. When we run this trip valve about a thousand feet from the tester and fill in with mud fluid we still have all the remaining 6,000 or more feet above the trip valve empty. The reason why we don't fill the drill pipe clear to the top is because we don't want to put that much weight on the formation. You wouldn't have any room for your sample. In other words, if we had that height of a column of fluid in the test tube, it would hold back the flow of fluid from the formation; it would retard it. The reason why we don't always put a thousand feet or so of mud fluid in the test tube, and only do that when we have a 7,000-foot well or deeper, is that the operator doesn't consider it necessary to put fluid in there only, as I said before, as a precaution against collapse of the drill stem. It is better not to have it if you don't need it, because it would just take the additional time of filling up that drill stem, and also it would put some pressure on the formation.

In arriving at my opinion about whether this Simmons valve would work or not, my testimony has to do only with the fact that you have to turn one part of the valve [fol. 571] against the other, with the weight on it. As to whether I find anything else wrong with the Simmons apparatus, as a safety factor I would not consider it safe to run in a well where you might encounter a high gas pressure or a high flow of water or oil. I wouldn't testify and say positively that it would be impossible to take the Simmons device and make a test with it. It might be able to be run; but I testified I didn't think it was practical.

Q. In testifying that you thought you would have too much difficulty in turning the valve did you contemplate that the valve would have any grease on it or would be dry?

A. I think that would have very little to do with it.

Q. Which way did you contemplate it? Which way have you in mind the valve shall be in giving your testimony?

A. Either dry or with grease.

Q. Your testimony applies in either case, does it? It doesn't make any difference whether there is any grease on it or not?

A. Yes.

Q. Would it turn easier with grease?

A. It would possibly turn easier with grease but my belief is with that amount of weight necessary to seat this packer it would be such a great amount of weight that the grease would not relieve the friction on it.

Q. How much weight would you say was required to seat the packer?

A. Normally, we give them about eight points on a weight indicator.

[fol. 572] Q. How much is that in pounds?

A. That depends on the number of lines but, normally, I would say twelve to fourteen thousand to twenty thousand pounds. It all depends on the depth.

Q. Have you any experience or knowledge as to how much pressure a film of oil or grease can withstand?

A. No; not figuratively speaking but from a practical standpoint I have an idea of what effect grease will have on two objects when placed together.

Q. Your testimony or criticism of this Simmons device is that you don't think it is as good as some later forms rather than a statement that you know that you couldn't make a test with it, is that correct?

A. I, naturally, don't think it is as good as any of the later forms. But, as I recall the testimony that I gave, I didn't think it could be operated as a commercial device.

Q. What do you mean by a commercial device? Do you mean in competition with the later improved types?

A. No. That refers to the question that you objected to when I stated that I didn't think it would be accepted by the operators.

Q. You don't testify that it cannot be operated, though? You won't make the positive statement that it can't be operated, will you?

A. That statement you couldn't make, Mr. Lyon, because to say positively nothing would operate in a well would be covering quite a broad field.

Q. And you have never seen one operated or attempted to be operated, have you?

A. I never heard of but one and Mr. Halliburton testified he saw one run.

Oil Field Service Corporation, and bears the signature "M. O. Johnston," I will state that that is my signature, and the signature, "Frank E. O'Neill, Secretary," is the signature of Frank E. O'Neill, who was secretary of the corporation at that time, and the seal on said document is the seal of the corporation.

Mr. Morgan: We offer this agreement in evidence, if your Honor pleases.

[fol. 579] The Clerk: That is already in evidence as Defendants' Exhibit O.

(Patent No. 1,715,504, issued June 4, 1929, was offered and received in evidence as Defendants' Exhibit Y.)

(Book of Exhibits, p. 473.)

Cross-examination.

By Mr. L. S. Lyon:

As far as I know, I have produced here all of the agreements between the defendant M. O. Johnston Oil Field Service Corporation and the Johnston Formation Testing Corporation in the Texas case, having to do with the relations between these two companies so far as the operations under the patents that have been offered here in evidence are concerned. There are no other agreements existing between the two companies. I think the agreement relating to Exhibits U and V provide that it shall terminate on a judgment being rendered in favor of Mr. Halliburton in the Texas case.

Q. You no longer hold that license, the defendant no longer has that right; is that right?

A. Well, I haven't been advised of such by my attorneys. I depend on them for that.

Q. Well, what I am trying to find out is whether that agreement has been terminated or has not been terminated.

A. I couldn't answer that.

Q. Are you paying any royalties under that agreement?

A. I have been, yes, sir.

Q. When did you last pay them?

A. I really couldn't say.

[fol. 580] Q. You are the president of this corporation, aren't you?

A. Yes, sir.

Q. And you knew that you were going to testify about this matter, didn't you, about these license agreements?

A. I didn't know that.

Q. Do you authorize the payments? Do you review them before they are made?

A. I have a bookkeeper and a secretary. Those things are made out and I sign the checks. I usually look them over.

Q. When did you last sign a check for payment of royalty under that agreement?

A. I don't know.

Q. When do you know of last signing one?

A. I am not sure.

Q. As near as you can be, when, according to your best recollection, is the date you last signed a check for royalties under that agreement?

A. I don't know whether I have signed a check since that decision in the Texas court or not. I don't believe I have.

Q. There would be certainly a decision to be made by your company and yourself as to whether you were going to pay royalties under that agreement after that decision; isn't that correct?

A. Yes, there should be, but we didn't.

Q. You don't remember coming to any decision about whether you would continue to pay the royalties or not; is that correct?

A. No, I haven't. I have been too busy trying to prepare for this suit here.

[fol. 581] Q. We didn't any of us know that this suit was going to be tried up here about four weeks ago. When were you advised of the decision in the Texas case?

A. I don't know when that was.

Q. Well, do you know about when it was?

A. No. I wouldn't state.

Q. What?

A. I wouldn't state. Mr. Lyon, I pay very little attention to paper details. My business is done in testing and building up a service organization, and I leave that up to my secretary and Mr. Farrer, my attorney.

Q. You don't pay any attention to whether or not you pay royalties to your brother's company in Texas; is that right?

where they are afraid of collapsing the drill stem and the other where they are making what is known as a water shut-off test and they wish to relieve some of the strain on the drill stem and place some fluid inside of the drill stem. [fol. 562] The trip valve is usually placed up the drill pipe when the test is being made in a deep well only when it is at a depth where the operator considers there is danger of collapsing the drill stem. The depth that I have in mind is, I would say, below 7,000 feet. So, in order to prevent the drill pipe from collapsing, fluid is put in there and the valve is set above the fluid. The fluid normally put in there to prevent the drill pipe from collapsing is either drilling fluid or just clear water. Where the trip valve is set at some distance above the main valve, the Johnston device is put into operation after the packer is set by dropping an iron rod, which we commonly speak of as a go-devil, to open the trip valve. At the time the trip valve is opened, the main valve is also opened. When the trip valve is finally opened, the fluid that is put in there below it to prevent the pipe from collapsing is raised up by the sample from the formation through the trip valve and on up the drill stem. The sample is then entrapped by the main valve closing. It is not objectionable to have this fluid, which prevents the pipe from collapsing, in the pipe mingling or commingling with the fluid to be sampled. The reason why there is no objection to that is that they are very careful to know just how much fluid to place in a drill stem. I might further explain that by saying in filling this drill stem they fill it very slowly to allow any air to escape so that they will not have any air pockets in this fluid, so when they come out of the hole they can get an accurate measure of how much fluid was taken from the formation while the test was being made. This fluid comes in from below and, normally, does not mix with the fluid that you placed in before going in the hole. [fol. 563] I am familiar with Plaintiff's Exhibit No. 9 in this case, which is the so-called original Simmons tool. I have carefully examined it here in court. In my opinion, the tool as shown in Exhibit No. 9 would not be a commercially operative testing tool. My reason for the opinion just given is that by examining the exhibit it shows you have to apply weight to seat this packer.

The Court: You have to do what?

A. You have to apply weight by means of lowering the drill stem to seat this packer against the formation, and

that would necessarily place weight on the face of this valve and, in my opinion, it would be rather hard to rotate those valves as they face there with that weight applied, and it would be somewhat uncertain if you tried to raise that weight off of it in order to open and close it. You might unseat your packer in so doing that. And, if you had it open, and tried to take part of the weight off in order to close it, and if you raised your packer up, it would allow your fluid to flow into your drill stem.

Q. I am going to hand you Defendants' Exhibit L, which is a model of the device shown in the Simmons patent, and ask you to point out with reference to this model why in your opinion it would not successfully operate.

Mr. L. S. Lyon: We make the same objection, your Honor, to all this line of testimony. This witness has no experience with this device and is not competent to testify to it. Opinion testimony of someone who has never made any tests with a device certainly cannot supersede testimony of people who actually did work the device.

The Court: The objection is overruled.

[fol. 564] Mr. L. S. Lyon: An exception.

A. It can be readily seen by this model as you apply pressure on the upper portion where the drill stem would be attached that you would cause a friction on this valve.

I mean friction between those two portions of the valve where one slides on the other. If it was stuck on there, it is my opinion you would have trouble closing the valve with that weight on there. If you would relieve the pressure so that there would not be that sticking action, it would be pretty hard to determine, in raising a drill stem in the well, whether you were just lifting enough to relieve that or whether you were lifting enough to release this packer from its seat. In order for the valve to operate you must always have the packer on its seat. If you relieved the packer from its seat, the valve could not then operate, because this bottom member has to be held stationary in order for the upper member to turn. If these two portions of the valve were somewhat separated so that they would not stick, there would be the likelihood, in my opinion, for leakage at that point. There would be pressure in the bottom of the well which would tend to force liquid of any kind in through those two portions of the valve. You would have

Q. What keeps it from going down?

A. As you travel through fluid, if you filled the drill stem full of fluid as you went in, that fluid would naturally, stay in that drill stem until you started out of the hole with the drill stem.

Q. How about at the top of the well? What keeps it from leaking out in the first part of it?

A. What prevents the drill stem from leaking?

Q. What prevents this fluid that is in the pipe before you put the trip valve in from leaking out?

A. From leaking out into the hole?

Q. Yes.

A. You have the hydrostatic head of the fluid on the outside.

Q. What prevents it before you get down far enough to create such a pressure?

A. It is the practice to have the hole full of fluid on the outside when you start to make up your tools. Your hole is always full on the outside.

[fol. 568] There is nothing to prevent the mud fluid from leaking out into the well out of the pipe below the trip valve as you go into the hole—while we are filling this drill stem with fluid—nothing only the fact that this fluid would not run out of the drill stem into the outside because you have equal pressure there.

Q. Don't you have the pressure of this main spring holding the main valve closed?

A. Unless you strike some object going in. Normally this comes in the hole, and down a short ways, that is usually spoken of as the surface string, and we wouldn't expect to encounter any objects in that. And even if the valve did open, why we would still know how much fluid came in the drill stem because we place this trip valve on top of the fluid after it is filled.

Normally, in a 7,000-foot well, it would take 14,000 pounds to collapse the spring on the main valve. I am unable to answer as to how deep down in the well the pipe would have to be to have a hydrostatic pressure that equalled 14,000 pounds. I wouldn't be able to answer that as to the figures on the hydrostatic head. In running a test that is usually figured by the engineer that is on the job representing the company that we are testing for. I don't know how far down the well you would have to be before

you would encounter a pressure that was greater than that which was represented by the power of the spring, not in actual figures. But through our experience in running the tool we have learned just about what amount of tension to put on this spring relative to the depth we plan to run it. In actual pounds we don't figure it to a fine point because a little additional tension on there wouldn't have any effect [fol. 569] on the valve trapping the sample. In running these testers we have weight indicators, and we would have to hang up going in the hole so that our weight indicator showed that we had a pressure against our packer more than the power of that spring before the main valve would open. Very often we have to spud through quite a number of tight places going in the hole. That is not what we intend shall be the condition of the hole, however. As long as I have been in the field it is a condition that you cannot overcome, that is, it is almost impossible to keep a hole in perfect condition because, even though you keep it reamed out, if you continue to drill ahead a ways, this mud will bake out or, rather, wall up the holes where as you travel down with the packer this mud will scrape off the walls and form an obstruction below the packer. I have removed the Johnston tester and found nothing in the tester except what small amount of mud fluid came from the "rat-hole". That is not uncommon, especially on a shoe test.

Q. And in that case the main valve has not opened at any time until you have set the packer, has it?

A. Well, if the main valve—

Q. Can't you answer that? In those cases you know the main valve didn't open at any time until after the packer was set?

A. Well, it couldn't enter anyway with the trip valve in there.

Q. Can you answer the question I gave you?

A. No. And you wouldn't have any way to know whether it had opened. You wouldn't have any way of checking that.

[fol. 570] The space between the main valve and the trip valve would hold a very small amount of fluid. Normally, I think two gallons will fill the space between the trip valve and the main valve. Usually in the "rat-hole" there is a greater amount of fluid than two gallons. If

Corporation, and the agreement that I have produced here in writing is the sole agreement concerning said use. I do not own any rights under those patents except the rights that are given me by virtue of this written agreement that is here in evidence. Under that agreement I am required to operate the tester in this State up to a certain minimum.

I have not read a copy of the decree entered by Judge Bryant in the Texas case. I read a letter that Judge Bryant sent out. I understand that a decree has been entered in the Texas case by Judge Bryant, and I know that the Johnston Formation Testing Corporation in Texas has been enjoined from using this device.

Q. Do you know that that decree provides that that injunction shall extend to the officers, agents, servants, employees and attorneys, or those in active concert or participating with them, referring to the Johnston Formation Testing Corporation?

A. I never figured that I was an agent; that I was operating out here under a license agreement; and I was a corporation alone; that my brothers owned no interest whatever in this corporation.

Q. But under their agreement with you they are obtaining money in the form of royalties from the business which you do, are they not?

A. Yes; I pay them royalties.

Referring to these five patents that the defendants have produced here, I contend that each one of those five [fol. 585] patents covers the Johnston tester. All five of the patents as produced are involved in that tester.

The Court: Do I understand it is the witness' position that the defendant's device is based upon all five of the patents? In other words, does your device here include something included within each of the five patents?

A. Yes, sir; it does.

Q. That is your position?

A. Yes, sir.

I do not understand that for a patent to cover a device the device must be included within the claims of the patent. I have read the claims of the first of these patents, No. 1,709,940. This is the patent that I am operating under.

from the Johnston Formation Testing Corporation. That is my understanding. But there are some additions there by which I am operating under different license agreements.

Q. The question is do any of the claims of this patent No. 1,709,940 read on the Johnston Formation tester as you use it?

A. I am not qualified to answer that. I hired Mr. Abbett and Mr. Boyken to go into those patents.

Q. Claim 1 of this patent refers to a hollow cylindrical casing, and says, "The upper head of said casing being provided with a valve seat and a bore beneath the same and the lower head of said casing being provided with a stuffing box." There is no such construction as that in the Johnston tester as you use it, is there?

A. I don't know. I would have to go over to that tool and have you point those things out for me to positively answer that.

[fol. 586] Mr. L. S. Lyon: If your Honor please, it seems to me, in view of the testimony of the witness, that instead of going through all of this by cross-examination, I should now make a motion to strike these patents on the ground that the defendant has not proven that these patents cover the Johnston tester.

The Court: By the Johnston tester you are referring to the defendant's exhibit?

Mr. L. S. Lyon: Yes.

The Witness: I am not qualified to compare the claims of these patents under which I am licensed with the structure of the tool that I am using, unless I go over there, Mr. Lyon, and you point those things out as to just what you mean. Then I will be glad to answer it. Neither of these patents that I am licensed under from the Johnston Formation Testing Corporation covers the trip valve or the equalizing valve. The patents that I am licensed under by the Johnston Formation Testing Corporation cover the tester unequipped with either an equalizing valve or a trip valve. The trip valve is the subject of a separate patent issued to Blaine Johnston, J. L. Johnston and E. C. Johnston.

(The defendants withdrew objection to Plaintiff's Exhibit 5 for Identification, and the Court ordered Plaintiffs'

know because I had never run the tool but just the first time, and I was experimenting, trying to find out how to work it the best. The nut that I just referred to is the nut at the very top of Figure 1 which appears in that Figure to be within the drill pipe. The two nuts on top of the stem—you see, this block comes down on the stem and two nuts adjust it down.

By the Court:

Q. The nut is not at the top of the well, is it?

A. No, sir.

If the nut is tightened, these two parts are harder to rotate, and if it is loosened it is easier to rotate. That is the way the device shown in the patent worked. In running the tool on Mr. Pace's property we didn't have any difficulty or lose part of the device in the well hole, not on those jobs that I was on. I know nothing about any lawsuit that occurred down there. I was not present at any place where they lost a part. There was no packer lost. I wasn't present when they lost a packer.

After these three tests I sold out to Mr. Halliburton and went back to Eldorado, Arkansas. I stayed there up until the fall or early in the winter of that year, 1926. I then went to Seminole, Oklahoma, and after I left Seminole I went to South America. I went to South America in the latter part of 1927. I was away out of the States about four years, that is, from 1927 until September 23, 1931, I believe, that I landed back in New Orleans.

[fol. 596] I helped design the so-called Halliburton stop cock and gear device; I suppose that is the one you are talking about. I don't say that I designed all of it. I worked with Mr. Stoddard, though, on the drawings of it, that is, I sketched part of it off. I think that was before I went to South America. That was while I was working with Mr. Halliburton there in Duncan. I don't remember the exact time that we designed the stop cock and gear device, but it was during the time I was there in Duncan; I was there about two months or a little over.

The first test on the Pace wells, if I remember correctly, was on or about March 17, 1926. I don't remember the dates of the other two tests. There were several days between the first one and the second one and, if I remember right, quite a little longer between the second one and the

third one because they were on different wells. I believe the second one was probably about a week after the first one. I don't remember the exact period of time between the second and third ones. You see, I was working on this other stuff and trying to get other jobs, and I don't remember just how long it was before we got another test. I believe that Mr. Stoddard and I were working on this stop cock and gear device in April, the month following the first test. I think Mr. Stoddard made the drawing of that just a little while before I left out there, just a few days; not very long. Mr. Halliburton told Mr. Stoddard and I to make one with a stop cock in it or asked us if we could make one with a stop cock in it, and I went ahead then and figured out the gears and Mr. Stoddard made the drawings. And they changed it some from the way I designed it, that is, I didn't make the beveled gear on it just as it was. Mr. [fol. 597] Stoddard, when he went ahead and made the drawings, put the beveled gears on it. We were trying to make this tool in different ways. The advantage in making the so-called stop cock and gear device was that it would make it work a little smoother and a little easier but it was for the same purpose. I don't know as there was much advantage more than to make it work easier. That is what I would figure was the advantage. I mean to say that the valve would open and close easier.

Q. You wouldn't have that difficulty that you had in connection with your second job, is that right?

A. Well, now, I might not have had that difficulty on more jobs than that because I had learned a little more about adjusting the nuts.

Q. By the way, were you paid for any one of these three jobs?

Mr. L. S. Lyon: Who?

By Mr. Boyken:

Q. Were these jobs paid for?

A. Not that I know of; no, sir.

Q. You were experimenting, as I understand it, with this tool?

A. Yes, sir. I was trying to show Mr. Halliburton and everybody else that the tool would work.

A. Yes, sir; we pay a royalty to them.

Q. But you don't pay any attention to it?

A. I pay attention to them. I know they are paid. Sometimes we are behind with them.

Q. Well, I am trying to find out whether you have stopped paying them since that decision or are continuing to pay. You must know what you decided to do about that.

A. I haven't decided to do anything about that.

Q. And you don't know whether they are paid or not?

A. No, I do not.

Q. What is your present position under the terms of that contract as to whether the contract is terminated or not, as far as you are concerned?

A. I just haven't given it any thought.

Q. Whom have you paid this royalty to when you have paid it? Whom have the checks been made payable to?

A. The Johnston Formation Testing Corporation.

[fol. 582] Q. That is the defendant in the Texas case?

A. Yes, sir.

Q. And have you any interest of any kind in that company?

A. I have not, no.

Q. Have you ever owned any?

A. No, sir.

Q. Whom did you run this Johnston tester for before you came to California and founded the company out here?

A. Well, I first run the Johnston tester in Alabama.

Q. For whom?

A. For the Jagers Oil Company.

Q. I mean did you own the business or were you working for some one of your brothers' companies?

A. I was working for the Jagers Oil Company. They were paying me. It was the Arkansas Drilling Company's rig. We rented their rig. The Jagers Oil Company was paying me, and I was driller and looking after it.

Q. The Arkansas Drilling Company was owned by your brother, was it?

A. Yes. At that time it was owned by two of my brothers.

Q. And you were working for them?

A. I was working for the Jagers Oil Company. We had rented their rig.

Q. Is that the only work you did with the Johnston tester before you came to California?

A. No. I put a well down of my own in Eldorado, Arkansas, and I used the tester on that job.

I was not directly in the testing business myself before I came out here. I had run the tool on numerous occasions, but it was just for accommodation, because oftentimes I wasn't busy, and if someone wanted a test and I happened to be there I would go out and run it. As originally built, this Johnston tester did not have any trip valve on it. I couldn't say how long the tester was operated without a trip valve. The first tool I ran was in Alabama sometime in the summer of 1927, and, as I remember that tool, it had straps on the side of it, all the way across the spring. It had no trip valve. I don't know exactly how long the Johnston tool was used before this trip valve was put on it. The Johnston tester itself was invented by my brother Edgar Johnston. He is one of the defendants in the Texas case. I do not understand that my brother Luther invented the trip valve. The three of my brothers were together. The tester was invented by Edgar Johnston, and then some time later the trip valve was invented by three of my brothers together. L

It is my understanding that I have no right to employ the Johnston tester here in California except as that right may be conferred on me by this license agreement that I produced here from the Johnston Formation Testing Corporation of Texas, with the explanation that that license agreement was gotten up for my corporation as a protection of our families. But personally my brothers and I have always trusted one another, and I would just as soon it had been an oral agreement. The rights in this Johnston tester are owned in Texas and the Midcontinent States by my brothers, and they conferred on me the California rights. The defendant in the Texas case is the Johnston Formation Testing Corporation and the president of that company is my brother, Edgar Johnston. Then there are other brothers who are interested in the [fol. 584] eastern company. We first had an oral agreement and it was understood between my brothers and I that I was to use the patents of the Johnston Formation Testing

Exhibit 5 for Identification admitted in evidence as Plaintiffs' Exhibit 5.

(This Exhibit is not printed, but is transmitted as a physical exhibit with the other physical exhibits in this case.)

(The letter of Judge Bryant deciding the Texas case was admitted in evidence as Plaintiffs' Exhibit 17.)

(Book of Exhibits, p. 228:)

[fol. 587] JOHN T. SIMMONS, called as a witness in behalf of plaintiffs, in rebuttal, being first duly sworn, testified as follows:

Direct examination.

By Mr. L. S. Lyon:

My name is John T. Simmons. I reside in Houston, Texas, and am 48 years of age. I am the John T. Simmons named in Letters Patent No. 1,930,987 here in suit. At the time I filed my application for this patent I lived in Eldorado, Arkansas, where I was employed in the well drilling business, supervising well drilling. I was born in Montgomery County, Texas. I had had quite a bit of experience in the oil fields prior to the time that I applied for this patent. I started in roughnecking in 1903, and I began my first drilling in 1906, and I drilled my first oil well in 1909. I was water well-drilling for a while. I have spent practically all of my life working at well drilling. I have worked on well-drilling rigs in other places than Texas; for instance, Arkansas and California. In California I have worked at Maricopa and Fellows, and since working there I drilled at Long Beach in 1925. Being asked to start in at the beginning and give an outline of what experience I have had in drilling oil wells and where, I have drilled in the States I have just mentioned, and in India, two different parts of India, and Australia; I was supervising drilling in Australia. I have drilled in South America in two different parts, eastern Venezuela and Maracaibo. I have also drilled in Oklahoma and Louisiana. I am a rotary driller as well as a cable tool driller. I have worked at both.

[fol. 588] I remember making an agreement on February 17, 1926, to turn the invention of this patent in suit over to Mr. Halliburton. After making that agreement, I conducted tests with the device of the patent while I was in Duncan, Oklahoma. At the time I made this first agreement with Mr. Halliburton I had one of the testers already made up. Exhibit 9 over here is the original tester that I had at the time I made that agreement in February, 1926, with Mr. Halliburton. I examined Plaintiffs' Exhibit 9 this morning. After I had made this agreement in February, 1926, I took this original tester to Duncan, Oklahoma. I was on three jobs with it. I ran it or supervised it on the running of three jobs. The purpose of those runs was to find out whether it would work all right or not, to see if it would operate as I had explained that it would operate. Mr. Halliburton wanted to have the valve operation of it tried out to find out if it would do what I claimed. Mr. Halliburton also wanted to find out for sure that the device was operative. I talked to Mr. Halliburton quite a bit about putting out a trial device like Plaintiffs' Exhibit 9 in a rotary well without circulation. I showed him how it would work by closing the valve and running it in the hole with a dry pipe, and how we would be able to open the valve and let the fluid in, and how the packer would seat and hold the fluid from passing downward. I do not believe that Mr. Halliburton stated that the device might freeze if there was no circulation. He didn't say that, like some of them did. There were a lot of them that thought it wasn't possible to pull it out without getting stuck.

After having manufactured this original tool, I first demonstrated this tool at the Garrett Hotel in Eldorado, Arkansas [fol. 589] sas. This was just a few days before I made the deal with Mr. Halliburton. I demonstrated this Plaintiffs' Exhibit 9 in the lobby of the Garrett Hotel in Eldorado, Arkansas, and tried to get a job to run it on. At the time I demonstrated this device in Eldorado, Arkansas, there was quite a bit of drilling going on around Eldorado, different places around Eldorado, Arkansas. Quite a good many drillers and oil men stopped and watched my demonstration of this tool in the lobby of the hotel.

When I took Plaintiffs' Exhibit 9 to Duncan, Oklahoma, I supervised it on three jobs. The wells in which it was run belonged to a man by the name of George Pace. The wells

were located between Duncan and Comanche, on the right-hand side of the road going from Duncan down to Comanche. There were present at these demonstrations, besides myself, Mr. Stoddard, and on the third job Mr. Halliburton was present. The first job was what I would call a perfect job. We opened the tool and the gas started to blow through the pipe, and we left it open for a little while, and then closed it and withdrew it from the hole, and we found about the amount of fluid in the pipe that would be in the "rat-hole", as near as we could figure, the amount of fluid that would be in the amount of "rat-hole" which we had. The second job, we opened the tool and the seat held, but there was no fluid came in. There was no air coming out of the pipe, so we said there was no fluid came in and that it was not productive sand. I suppose that it would be called a negative test. The test showed that there was nothing coming in. And the third job was a little larger gas well than the first one. It blew hard enough to blow a little of the mud, spray it out [fol. 590] through the pipe, if I remember right, but didn't blow all the mud entirely out of the pipe.

I would say that all of the three tests that I supervised were satisfactory tests. The first and third ones I would say were what I would call perfect. The other one, the middle test, the second test, was satisfactory in the sense that I determined whether or not there was any production in the formation. There was no air. We couldn't tell that there was any air coming out of the pipe, or gas, so we figured there was no fluid in the sand or nothing to come in. So that would be a satisfactory test. We could tell when we made those three tests when we had opened the valve, and could tell when we had closed it. Based on my knowledge of Exhibit 9 and my experience in running Exhibit 9 on those three Pace jobs, I will state to the Court that Plaintiffs' Exhibit 9 is an operative device. At the time that I built this Plaintiffs' Exhibit 9 I could have used it with commercial success if I could have got jobs to use it on. As to whether the device is a commercial success today, I would say that if it were not for the improvements on it that makes it easier to work, I could make money with it. In other words, I could make a commercial success out of the original device today if I didn't have to run it in competition with these devices that are improvements on it. I know that Plaintiffs' Exhibit No. 9 is an operative device because I have supervised the operation of it. If you tighten the nut

too tight, it won't turn, but if you adjust it properly it will turn.

Mr. Halliburton was present at the third test on the Pace well near Duncan. After the third test I sold out my interest to Mr. Halliburton; he bought me out for cash. The [fol. 591] first agreement that I made down in Arkansas with Mr. Halliburton called for giving me stock in a company, and after Mr. Halliburton saw this third test he bought me completely out by paying me cash, but I still held a little interest for quite a while, but he paid me out in cash or bought it out. I gave a man by the name of Henderson a half interest in the invention for money to apply for the patent and build a tool and carry on the expenses. When Mr. Halliburton made the first agreement with me in Arkansas on February 17, 1926, he paid Mr. Henderson and myself \$2500 apiece in cash, and we were to get \$10,000 each in stock in a \$30,000 corporation. I had decided to sell out and let him go ahead with it, and I sold out to him. Mr. Henderson and I sold out our interest to him. I got \$7500, in all, but I put \$500 back to take some stock in the invention. Mr. Henderson received \$5,000. Those payments were in addition to the money we had received down in Arkansas. After I had received the payment from Mr. Halliburton, I returned to Arkansas. I did not immediately afterwards leave the United States. I had nothing to do from then on for some time with the introduction of this tester to the trade. I went into the casing pulling business. I took my money and went in the casing pulling business, and I had nothing to do with Mr. Halliburton or with the device from that time on.

#### Cross-examination.

By Mr. Boyken:

I am at the present time employed as assistant superintendent of testing in the Houston district; the Gulf Coast district, for the Halliburton Oil Well Cementing Company. [fol. 592] The first time that I entered the employ of Mr. Halliburton's Company was in April of 1934, and have been employed by that company now somewhere around eighteen months or a little more. During that time I tested part of the time, and I have been assistant superintendent of testing for the last five or six months, and I am now so employed.

It is my testimony that I have used Plaintiffs' Exhibit No. 9 on three occasions. I supervised the using of it. I was present on the three occasions when Exhibit 9 was used. That tool was used on these three occasions for Pace's wells. They were located in or close to Duncan, Oklahoma. I never used the tool on any other occasion besides those three occasions for Mr. Pace. The first test was what I would call a perfect job. A sample of the mud fluid in the "rat-hole" was entrapped in the pipe above the valve. There was no oil. It was just gas that blew out through the mud that was in the pipe, and the mud sample was still in the pipe when it came out of the hole, in what came out of the "rat-hole" above the valve. There was no other fluid obtained in this sample chamber excepting rotary mud. The second job, we didn't get any fluid in the pipe, that is, we didn't take any out of the pipe when we raised the pipe from the hole.

Q. You raised the pipe from the hole after the valve was closed and there was no fluid of any kind in the pipe?

A. No, sir. We didn't close the valve.

The reason why we didn't close the valve was we were experimenting with this and I had changed the oil. I had changed the oil between the two blocks and tightened the nuts too tight. I don't know the depth that the tool was [fol. 593] operated in the second test, but it was some deeper than the first one.

Q. And by tightening that nut too tight you found you could not rotate the valve, did you?

A. I couldn't say that we couldn't rotate it. We opened the valve but in closing it we hadn't made the drill pipe up tight enough.

Q. You hadn't what?

A. We hadn't made the drill pipe up tight enough, and I had tightened my nuts too tight on the blocks.

Q. So that, as I understand you, in the second test, when you attempted to close the valve by rotating the drill pipe the valve didn't close?

A. No; the valve didn't close.

Q. And when you withdrew Exhibit No. 9 from the hole there was no fluid in the sampling chamber?

A. I beg your pardon?

Q. There was no liquid in the sampling chamber?

A. No. We pulled it out without mud; just left it open and came right out of the hole. The mud ran out as we

came out of the hole. We were satisfied there was nothing in this test because nothing entered the pipe and no air came out when we opened the valve. And we were satisfied from the test that there was nothing there.

Q. How was it you happened to tighten those valves so that they wouldn't close, that the two parts wouldn't close?

A. We were experimenting with it and I put a thinner oil between them to see if it would work as the engineer had claimed he thought it would do. So on the third test I put the same oil in that I was using on the first one and [fol. 594] it worked the same as it did on the first test, that is, on the third test.

Q. I want to come back just for a moment to the second of these tests.. When you speak of putting in a thinner oil you mean a thinner oil between the two working parts of the valve?

A. Yes.

Q. And you found that oil was too thin?

A. I don't know that it was oil that was too thin or whether it was me adjusting my nuts on the stem too tight.

I believe the second test was made on the same well as the first test was made. I am not positive but it was deeper than the first test, I believe, on the same job, on the same well, rather.. The third test was also for Mr. Pace. It was not on the same well as the first two. The third test, as I remember, was across the road from the well first tested. On the third test we opened the valve and the well started to blowing and the seat held and the mud didn't go down on the outside and the gas began to blow out through the pipe and sprayed some of the mud from the "rat-hole" where it entered through the valve. I mean that it came out at the top of the well, at the top of the drill pipe; and we left that for quite a little while and closed it and came out of the hole and there was a little mud left in the pipe. It hadn't blown it all out. The well wasn't strong enough to clear the pipe out. We didn't get any other fluid in the drill pipe above the valve; excepting rotary fluid or rotary mud. There was no oil showing in it. The only change in the tool between the second and third tests was that I just put different oil between the two blocks. I put in a thinner [fol. 595] oil. I didn't loosen that nut so that the two portions of the valve would rotate more easily; not necessarily. I adjusted it the very best I could at that time. I didn't

Q. You also applied for a patent on the device shown in Figure No. 9, or Exhibit No. 9, did you not, that is, the patent here in suit?

A. Yes, sir.

The patent drawing was not made from Plaintiffs' Exhibit 9. The tool there was made partly by the patent drawings, that is, I had the drawings made and it wasn't made exactly according to the drawings. The exposed slot is one of the differences, and I never did intend to have that exposed [fol. 598] posed that way in the first place. The patent drawing shouldn't show the exposed slot. The fact that it does was the engineer's fault; it wasn't mine. I don't know as there would be any big advantage in having the slot closed. My intention was to have it enclosed when I made the drawing. I had nothing to do with the making of the "J" slot device or the invention or design of it. We have been using it for some time but I didn't have anything to do with the designing of it at first at all.

Concerning those three tests that I supervised with Plaintiffs' Exhibit 9, the first job was between fourteen and fifteen hundred feet, if I am not mistaken. I am pretty sure that is right. The other two were deeper but I don't remember the exact depth. The second job was deeper and the third one was a little deeper than the first one but I don't remember the exact depth. The way I remember it is the first job was the shallowest job that I was on.

If you loosened the nut on Plaintiffs' Exhibit 9 too loose, of course, it would leak when you started in the hole, but, if you put the proper grease in there or oil, then you could loosen it loose and it wouldn't leak. In order to rotate the valve, which is shown in my patent drawing, you do not necessarily have to have a seat for the packer. You can anchor the pipe on the bottom of the hole. To get a perfect test you will have to seat your packer. The packer can be expanded very quickly by the fluid from above it if you open the tool. If you open the tool, the mud from above will seat your packer if you have got it in place where it can be seated.

[fol. 599] By the Court:

Q. Just what do you mean by opening the tool?

A. To open the tool it releases the pressure from the bottom.

Q. Do you mean the valve?

A. Yes, sir; opening the valve of the tool.

I mean to say in testing with my device you don't have to first seat the packer and seal off the formation above from the formation below the packer, not all of the time. Sometimes you don't seat it at all. The seat won't hold. If the seat doesn't hold, you can rotate the valve by turning the pipe, and that rotates a part of the valve, and you can close it in that way, too, whether the seat holds or not.

Q. Now, I want to know in that kind of a device, if you loosen that nut so that the two members of the valve rotate easier one with respect to the other, can you still hold that seat with the packer?

A. Well, if the packer is seated, your mud fluid pressure from above is going to hold the packer seated after you have opened your tool so that you can close it; and, if you put enough weight on the packer and push it in that hole—you can't very well put something in the hole that won't take a little pull to get it out, and then you are able to take practically all of your weight off of the pipe so that you can turn it.

Q. If that nut is loosened so that there is space in there between the two portions of the valve, isn't there the liability of fluid pressure entering into that space between those two valves and, therefore, spoil your test?

A. Well, there is a chance of a leakage in most all valves. I haven't seen any that was perfect, that wouldn't leak; I don't believe.

[fol. 600] Q. I am talking now about the valve as shown in the patent.

A. If you leave that tool loose, it would leak.

Q. And that would spoil your test?

A. Well, more than likely. If it leaked enough, it would.

Redirect examination.

By Mr. L. S. Lyon:

I have no doubt but that I could adjust that nut so that the valve was not too tight but was loose enough and have it operative so that it wouldn't leak. I did do it and I can do it again. When the nut is adjusted the tool is not

spring to push that valve into the seat. You have to raise your drill pipe first. I do not agree with the testimony of defendants' witnesses that the spring snaps the main valve shut. I have never had any experience or noticed anything at the well which would indicate that the spring snaps the main valve shut. I do not believe it is possible for the spring to snap the main valve shut at that point.

Cross-examination.

By Mr. Morgan:

I left the Johnston Company in July of this year, after working for that company four months, and I went to work immediately for the Halliburton Company. Mr. Linville and I didn't leave together. We didn't leave at the same time. He left first. I left within a week after Mr. Linville. Mr. Halliburton did not contact me, neither did I contact Mr. Halliburton, before I went to work for the Halliburton Company. I first contacted Mr. Linville. I happened to be in conversation with Mr. Linville and he told me there was a job open with the Halliburton Company for me if I wanted it. I had heard of the decision in the Texas case. I talked with Mr. M. O. Johnston before I left.

Q. Didn't you tell him that you were going to work for the Universal Consolidated Oil Company?

A. Yes; I had a job out there.

Q. And you did not go to work for that company, did you?

A. No, sir.

[fol. 615] Q. Instead of that you went to work for the plaintiff company here?

A. That is right.

Before going to work for the Halliburton Company I had run several Johnston tests on wells. I hadn't done any testing before I went to work for the Johnston Company, other than just being a driller on the well that run a test. I had run a number of Johnston tests on wells that I was drilling on before I went to work for the Johnston Company. Altogether, in point of time, I have been testing since March of this year, when I first went to work for the Johnston Company.

I understand a well in normal condition to be tested means a good hole, out to gauge, reasonably straight. Oil wells don't have to be exactly perfect. These packers that we run in the hole, they are usually an inch under the diameter of the big hole, that is, the cone packers, and the hole doesn't have to be perfect to get the packer down. I mean by normal condition a condition where we have a reasonably straight hole with no obstructions and with no leak in the drill pipe, and no difficulty in seating the packer; also when you do not have to spud a great many times, and also where you encounter no difficulty whatever in removing your packer. I would say that these conditions obtain in 75 per cent of the wells. 75 per cent of the wells are in good condition. 75 per cent of the time we find the hole without any obstructions whatever. I am referring to deep holes, say between 6,000 and 10,000 feet in depth. I don't say that it is necessary to spud your packer all the time on the seat, or even any of the time. There have been tests made without even spudding. I would say that [fol. 616] you have to spud before you get a firm seat for the packer usually twice or three times. I mean by that, just spud your packer on the seat. You first get your packer on the seat, and then take the slack out of this drill pipe and drop it down again, and you have a mark on your drill pipe at your table, and you can tell whether it goes down or not, and if it doesn't go down you consider your packer seated. I have not figured out in percentages, what percentage of the time you are able to make a complete seat, a satisfactory seat, without spudding the packer. You do not have to spud almost always; you don't have to spud always. Whether you spud or not depends on the condition of the formation you are going to test. I would say the percentage of the time, in my experience, I have had to spud, against the time when I did not have to spud, would be fifty-fifty; depending on the formation you are going to seat your packer on. In spudding you drop your packer on the formation seat. In raising the drill pipe again we try not to pull the packer off the seat.

Q. In spudding you raise the drill pipe, don't you?

A. That is right.

Q. And in doing so what do you do to the main valve?

A. You close it.

tions normally and does not open before the packer reaches its seat, the trip valve does not necessarily perform any actual function in the taking of the test. In spudding with the Johnston tool to seat the packer the main valve cannot open unless the packer has sufficiently seated to shut off the pressure of the drilling fluid. Whether the Johnston tester can be operated without the spring on the main valve, I couldn't say for sure, but I know that I have run a test with a new spring on the tool, and when I came out of the hole there was no tension on the spring because the spring lost its tension; it wasn't tempered right to respond back to its normal position. If the spring loses its tension it cannot perform any function. This last test that I have referred to was a successful test. It is necessary to move the drill pipe in order to close the main valve in the Johnston tool after the test has been received, because the main valve is fastened direct onto the drill pipe, and the only way it can be moved is by moving the drill pipe. I do not agree with the testimony of defendants' witnesses that the spring snaps the main valve shut. My experience in that regard is that you have to release the tension on that spring before that spring can close the valve.

#### Cross-examination.

By Mr. Morgan:

I was working for either the present defendant company or its predecessor in California since September of 1930. I was one of the first employees that Mr. Johnston had. Prior to the time that I came to work for the Johnston Company I was in Canada, drilling for C. R. Craft. I have personally drilled two wells in my lifetime. That is my [fol. 604] entire experience in the oil fields. I was not using rotary tools; I was using cable tools. I never used a rotary tool in drilling a well, but I have supervised the drilling of several rotary wells. I have been in oil work since November of 1916 continuously, with the exception of one year from July of 1928 until the spring of 1929. I went to work in the field as a tool dresser and went from that to a gang pusher or roustabout boss; from that to assistant lease foreman, and after I left that company I went as superintendent for the Keystone Oil Company and put down two rotary holes for them and supervised the drilling.

I had just finished a job of drilling in Canada when I first entered the employ of the Johnston Company. I was not looking for work and got a job with the Johnston people. Mr. Van Deinse wrote me in Canada and gave me the proposition of the tool and asked me if I would come to California to work for him. Mr. Van Deinse was then president of the Johnston Company. At that time I had never used a tester, and my first experience with testers was with the Johnston tester. At the time I went to work for the Johnston Company, the tester they were using had a trip valve. I would say that I have operated the Johnston device without a trip valve four or five times. I mentioned in my direct examination one particular test which was with the Associated Oil Company at Seal Beach. If I remember rightly, the well was in the neighborhood of 6,000 feet deep. I did not encounter any difficulties in getting down to where I was going to make the test. In other words, I had a perfect well so far as the trip downward was concerned, and in coming out there was no evidence of any leak in the drill stem, and I had a [fol: 605] successful test. It showed water with some oil. It showed drilling fluid on top of the test; I would say in the neighborhood of 20 feet of drilling fluid on top of the test. I can't say for sure where the other wells that I tested without a trip valve were located, because I have never kept track of the wells I have tested. I recall the Mascot well for the Standard Oil Company. I tested that well with the Johnston tester, using a trip valve. I cannot say for sure whether I ran tests on that well without a trip valve or not, but I know I have used a trip valve on that well. I don't recall making a test of that well on January 15, 1933, without a trip valve. I don't recall it. I know that I ran tests on that well for possibly six weeks' time. I don't recall that on one occasion, on January 15, 1933, I ran a Johnston tester on that well; that I set the packer at 8,595 feet; that I had no trip valve; that I did not get any blow through the drill pipe, which acted as though no fluid were entering the hole; that I left the tester stand for two hours and found that the fluid had equalized inside and outside of the drill pipe, and that the valve had evidently opened while running in. Possibly I did but I do not remember. I have no recollection of the case that you mention. I positively have no recollection of running a test upon that well without using a trip valve. Not all of the tests that I ran with the trip valve proved successful.

a seat and during the process of spudding in, that is, coming up and down, trying to jam your packer into a firm seat, each time you jam down on the formation you open the valve, and when you raise it up fluid does not rush in. I do not mean to say that you can spud your packer without opening your main valve to the entrance of fluid. I said that you would open the valve every time you would set the weight of the pipe down on the packer. Doing that would open the main valve to the entrance of the drilling fluid. You don't open the valve to the fluid above the packer. You open it to the fluid below the packer that is in the "rat-hole." When you first set it down in that first spudding operation that drilling fluid would rush up, and if you had no trip valve there it would rush up into the drill pipe. When you set it down the first time, you would not then pull it up, in the first step [fol: 609] in the spudding. You simply take the spring out of the pipe; and you don't lift the packer off of the seat after it once goes on the seat. If sometimes it is lifted clear of the seat, it is a case of accident. If you haven't a perfect seat, that indicates there is a leak down from the upper section of the well down into the "rat-hole." It is hard to tell, while you are lifting up and down, until you do get a firm seat, that fluid is going down into the "rat-hole" and being taken up into the drilling pipe by the opening of the valve, because you can't see the condition of your seat or the shoulder. If you have a trip valve you don't care. It doesn't amount to anything if the trip valve is there. If the trip valve isn't there you don't know exactly what you are doing, and you don't know whether you are going to get a test or not. The main spring has been a part of the main valve ever since I have known the Johnston tester. I have never experienced a jar at the top of the well as the pipe was being lifted and the main spring worked. I have never heard of that jar. I have worked on wells where Mr. Heitmeyer was the engineer in charge, and I have never experienced that jar in closing the valve. I recall only one test where the main spring was not utilized. That test was for the Standard Oil Company in the Baldwin Hills. I don't remember who the operator was or who was in charge of the operation. I can't recall the exact man who was in charge, because I have run possibly a hundred or more tests. I could give you the names of the tool pushers on the lease, but the

one that was on this particular job I could not tell you. I don't know who was the engineer of the Standard Oil Company who was in charge. They have three different engineers that witnessed those tests. I couldn't tell you [fol. 610] who was in charge of this particular test. I have never run a test without the main spring. It is a fact that when you lift the packer from its seat in withdrawing the device from the well that the packer always jumps or bounds as it is being pulled off of that seat. I don't wish to express an opinion on whether there is a tendency of the main valve on the Johnston tool to open when the packer is raised from its seat. What I would say was the cause of the rebound, is like anything sticking tight in a hole, you take a strain or stretch on the drill pipe, and when that packer leaves you get a rebound on the drill pipe. The sudden release there, the same as a rubber band. If you hold a rubber band tight and leave loose of it you get a rebound. As I said before, I couldn't say whether that rebound would tend to force open the main valve.

The paper that you show me is a test ticket made out for the Standard Oil Company Mascot No. 1 at Taft. That ticket is made out in my handwriting, and indicates a mis-run. There is nothing on the ticket to indicate whether or not the trip valve was used in that run. One reason that it was a mis-run was that I lost the packer in there. I couldn't tell you what run that ticket was made for, because it isn't numbered or doesn't designate any one specific run. It contains a date. The ticket does not aid me at all in recalling this particular test, because I ran, I couldn't say exactly how many, possibly four or five tests on that well. The word "Cancelled" written upon this particular ticket is not in my handwriting. I have no recollection of that particular test at all, and no recollection as to whether or not the trip valve was used in connection with it.

[fol. 611] DON W. BIVENS, called as a witness on behalf of plaintiffs, in rebuttal, being first duly sworn, testified as follows:

Direct examination.

By Mr. L. S. Lyon:

My name is Don W. Bivens. I reside at Huntington Park, California. I am 31 years of age, and by occupation

oil well tester for the Halliburton Oil Well Cementing Company. I have been employed by the Halliburton Oil Well Cementing Company since last July. My employment with that company has been here in California. Prior to going to work for the Halliburton Company, immediately before that, I was employed with the M. O. Johnston Oil Field Service Corporation, one of the defendants here. I was employed as a tester in the Los Angeles Basin, and at Bakersfield also. I would say that while in the employ of the Johnston Company I made approximately a hundred tests, and in making these tests I employed the Johnston tester of the type illustrated in the full sized device here on the floor, Exhibit D. I was employed by the defendant Johnston Company from last March until July. Prior to going to work on the Johnston tester I had not been employed by any formation testing company. I had been a driller prior to going to work for the Johnston Company, and until employed by that company I had never supervised a test. I went to drilling for the Ohio Oil Company in 1928. I drilled for several other companies, before that, and I had roughnecked and worked derrick and everything, just did general drilling work on the rigs. At the time I went to work for the Johnston Company I was an experienced and fully qualified rotary driller; at least I was getting paid for it.

I have heard the testimony of Mr. O'Neill, Mr. Dean, and Mr. Abbett. I do not agree with those witnesses that the inlet to the Johnston tester is the trip valve, as distinguished from the main valve. I would say that the inlet valve of the Johnston tester is the main valve. The trip valve is not a part of the tester. The function that is served by that trip valve is that of a safety valve. If the test proceeds normally, as intended, with the Johnston tester, the trip valve does not perform any useful function. If you don't meet any obstructions going in the hole, you can get a test without it. I don't think it is very frequent that you would run into obstructions going into the hole to make a test with the Johnston tester that would open the main valve. If the hole is properly conditioned, you don't meet any obstructions at all.

Q. In spudding with the Johnston tester do you open the hole below the packer to the pressure of the drilling fluid at any time that the main valve is open?

A. Well, do you mean by that that the pressure above the packer—

Q. Yes.

A. Well, if the packer is properly seated you wouldn't open it under pressure, I don't think.

Q. And in order to open the main valve the packer has to seat, does it not?

A. Yes.

Q. And if the packer is seated to open the main valve, even in spudding the packer seals off the well below the [fol. 613] packer from the pressure of the drilling fluid above; is that correct?

A. Yes.

The spring on the main valve has always been present at all tests that I have made with the Johnston tool. I have released the tension on the spring a time or two. In order to render the spring operative on the Johnston main valve you have got to turn up the adjusting nut to apply tension to it. If you apply no tension to the spring on the main valve of the Johnston device the spring cannot perform any function in the operation of the tester. I don't think it could, until your valve had opened and had reached that tension on the spring where it would be hanging. I have operated the Johnston tester for the defendant corporation with the spring in the condition last described. One such occasion was for the Standard Oil Company at Trico, 17 miles west of Delano. We relieved the tension on the spring, on that test. The formation was so soft that it wouldn't hold the packer, and we had to let the tension off. The reason why we took the tension off the spring was because you couldn't seat the packer against the formation and take your test and open your valve unless you had released this spring, relieved that tension on the spring first. By relieving the tension on the spring, it just left the spring loose. The reason for doing this was that we didn't have to put so much weight on the packer to open the main valve. On the occasion of that test we recovered about 2200 feet of salt water. I would say that was a highly successful test. Upon completing tests with the Johnston tool, in order to close the main valve you have to lift your drill pipe up and pull your [fol. 614] valve into the seat. It is not possible for the

Q. You close the main valve?

A. Yes; on the Johnston tool.

Q. And what happens to the equalizing valve when you close the main valve in that spudding?

A. It remains closed.

Q. Doesn't the equalizing valve open when you close that main valve?

A. Yes.

[fol. 617] Q. And doesn't the fluid then rush down into the "rat-hole"?

A. That is right.

Q. And then you put the pipe down again and open the valve, don't you, in the next motion of the spudding operation?

A. If the trip valve was closed, you don't take in any fluid.

Q. If the trip valve is there, then no fluid comes in, is that correct?

A. That is right.

Q. But, suppose you have no trip valve. Then what happens?

A. You just have to work accordingly. You have to set your packer on the seat and try not to lift it up.

Q. But, if the trip valve isn't there, then, when you put that device down again in the spudding operation, the main valve opens and the fluid that has come down into the "rat-hole" through the equalizing valve rushes up into the chamber, does it not?

A. Yes; it would.

Q. And doesn't the trip valve serve the purpose of preventing that very thing?

A. That is right.

Q. And that would happen every time you spudded, would it not, or 50 per cent of the time that you ran tests?

A. 50 per cent of the time that you pulled your packer up like that or your drill pipe up.

Q. You say in the tests that you have been familiar with you have had to spud 50 per cent of the time. Now, if you had to do that 50 per cent of the time, would not [fol. 618] the device, if there were no trip valve there then, take the drilling fluid that has gone down into the "rat-hole" through the equalizing valve in the upward motion of the spudding? Wouldn't that rush up into the chamber?

A. Sure.

Q. And it would spoil your test, wouldn't it?

A. Yes.

Q. Did you ever run the Johnston tool without the trip valve?

A. No.

### Redirect examination.

By Mr. L. S. Lyon:

When you are running the Johnston tool and seating the packer, you leave weight on your indicator so as to avoid unseating the packer when you are spudding. You ordinarily leave about 8 points of weight on the indicator. You always leave at least two points to be sure you don't unseat or pull the packer off of the seat during spudding. The precaution that we take to avoid lifting the packer off of the seat when we are spudding to seat the packer with the Johnston tool is that we usually look at what the weight indicator reads before it goes onto the seat. Then you set your packer down on the seat and make a mark on your drill pipe and pick it up again almost to the mark and drop it again. We watch the indicator to see that we don't pick it up too high. We tell the driller not to pick it up past a certain point on the weight indicator. That keeps us from pulling the packer off of the seat. In spudding with the Johnston tester the packer is not, except by accident, allowed to leave the seat. It is [fol. 619] possible to open the equalizing valve on the packer of the Johnston tester without unseating the packer; if you pick it up high enough, it will.

By the Court:

Q. Does the equalizing valve open before you pick up the packer?

A. Yes.

Q. It does?

A. Yes, sir.

In the spudding operation any drilling fluid that enters the tester through the main valve must come from below the packer. It must be drilling fluid that is down in the "rat-hole". If your packer is properly seated, the pressure of the drilling fluid above the packer will not be imposed on the drilling fluid in the "rat-hole".

down in the well or in the casing. It is on top, out where you can get to it, out on the derrick floor.

Referring to the drawing in my patent, Figure 1 shows in dotted lines some pipe 23 to which the tester is attached. That is attached before running the tool; when you start to run the tool in the well, and after the nut has been adjusted. This patent drawing was made from a drawing that I had made. The patent drawing was made by a patent attorney in Washington. This drawing that I have here in my hand was supposed to be made in Washington, but it was made from my blue print that I had made by the Eby Engineering Company in Eldorado, Arkansas. I paid for that blueprint and got a receipt. I gave a check to them that Mr. Henderson gave me, and I got a receipt for it. The photostatic copy of Plaintiffs' Exhibit No. 8 in the Texas case is a photostatic copy of the receipt that I got when I paid for that drawing.

(The receipt last referred to was offered and received in evidence as Plaintiffs' Exhibit 18.)

(Book of Exhibits, p. 230.)

[fol. 601] After obtaining three blue prints I took one of the prints to the machine shop and had the tool made. I took it myself. I sent another print of it to the patent attorneys. Mr. Henderson and I fixed up the papers, and he did the mailing of the other copy to Washington.

(Plaintiffs' Exhibits 6, 7 and 8 for Identification were offered and received in evidence as Plaintiffs' Exhibits 6, 7 and 8, respectively.)

GEORGE R. LINVILLE, called as a witness on behalf of plaintiffs, in rebuttal, being first duly sworn, testified as follows:

Direct examination:

My name is George R. Linville. I reside at 2747 Glenview Avenue, Los Angeles, California. I am 45 years of age, and at the present time am service man for the Halliburton Oil Well Cementing Company, servicing testing equipment in the Los Angeles basin. I was employed by the defendant M. O. Johnston Oil Field Service Corporation from the time that company was organized until July,

1935. I was employed by the defendant corporation as a tester. I was the man that went to the wells with the Johnston tester and supervised the running of it. The defendant M. O. Johnston Oil Field Service Corporation was organized, I believe, sometime around June, 1933. Prior to the organization of the last named company I was employed as a tester for the Johnston Formation Testing Company of California, which was the predecessor of the present defendant. The predecessor of the defendant corporation in testing wells employed the same tool as the defendant corporation is now using. I went to work for the [fol. 602] Johnston Formation Testing Company of California in September, 1930, and worked for them continuously up until that company was succeeded by the present defendant. Prior to going to work for the Johnston Company in 1930 I was a cable tool driller, and had drilled in Canada. I would say that I have personally supervised in the neighborhood of 500 tests with the Johnston tool.

I heard the testimony of Mr. O'Neill, Mr. Abbett, and Mr. Dear in this case regarding how the Johnston tool operates. Referring to their statement that the trip valve is an essential part of the tester, I agree with them in this way, that it is a safety valve. It is not part of the tester. In my first operations with the Johnston tester a trip valve was employed. I have been present and operated the Johnston tester without the trip valve. On these occasions Mr. M. O. Johnston was not present, to my knowledge. One of the occasions when the Johnston tester was operated without a trip valve was when I ran a test for the Associated Oil Company at Seal Beach, California. I supervised the running of the test. This test was made with the Johnston tester, and there was no trip valve. The first time I run in the hole and was unable to get the valve open. It was a 2½ inch tool. We were running in 2-inch drill pipe, and the first run I could not get the valve open because I couldn't get the go-devil down through the pipe. We came out of the hole, and, so as to eliminate any chance of not getting it open the second time, so as to complete the test that day, we took the trip valve out and ran the tool without the trip valve. This test was a successful test. Ordinarily, in the normal operation [fol. 603] of the Johnston tool, the main valve does not open before the packer reaches the seat. If the main valve func-

Q. Did it prove successful in any instance except the one you have mentioned in relation to the Associated Oil Company?

A. Without a trip valve, do you mean?

Q. Yes.

A. Yes.

[fol. 606] I can't recall at the present time where that was. I don't recall the name of the company, nor the operators, nor the engineer in charge. I remember that it was a formation test in some of those cases, and outside of the one test that I have mentioned, for the Associated Oil Company, I can't recall the company, and I cannot recall the well, or anyone present. As far as I remember, the other tests that I made without a trip valve were successful.

Q. And you can't recall any unsuccessful tests?

A. I can recall lots of unsuccessful tests because when we first started running tests in the field we had more unsuccessful tests than we did successful.

Q. I am talking about tests without the trip valve. You mentioned four tests that you have made without the trip valve. You have given one that you are able to describe, one that you cannot describe either as to the well or the owner, or the operator or anything else, and now you have mentioned two others. Can you give us any information as to these other two tests that you say you made without the trip valve?

A. Well, my answer is the same as it was before. At that time—

Q. No. Do you recall them or not?

Mr. L. S. Lyon: Let him finish his answer.

The Court: He says he can't remember any more.

A. I wanted to explain why it is impossible for me to remember. Over a time of five years the number of wells that I have been on and the number of wells I have tested and under different conditions makes it impossible for me to recall the exact wells which you mention.

[fol. 607] I left the Johnston Company on the 15th day of July, 1935. I worked continuously for the Johnston companies in this State from 1930 up until July of this year, and at that time I quit the Johnston Company to go to work for the Halliburton Company. That was after the decision in the Texas case. The only time that I ever

solicited business for the Johnston Company was in company with Mr. Johnston. I have made representations to operators as to the Johnston tool. I talked with quite a few men in the Los Angeles Basin. In talking with people about the trip valve in connection with the Johnston tester, I always spoke of the trip valve as a safety valve. I cannot recall the direct words that I told any operator any more than I explained the tool to them, how the tool worked and which was the main valve and which was the trip valve or safety valve.

If you ran a Johnston tester down into a hole and met with obstructions therein, you would open the main valve, and would be unable to get a satisfactory test.

Q. In other words, then, without the trip valve you would not be able to get a satisfactory test if you encountered obstructions on the road down into the hole?

A. No.

Q. And you very often encounter obstructions, do you not?

A. No. I would say not over 15 per cent of the time do we contact obstructions in the hole.

Q. Then, you would say that in 15 per cent of the tests the trip valve would be necessary?

A. Yes; in the case of encountering obstructions in the hole.

[fol. 608] It is a fact that when you get down to the place where you intend to set your packer, if it be a "rat-hole" formation, you sometimes have difficulty in obtaining a firm seat with your packer, and that you have to do what is known as spudding, that is, you have to lift up and jam down and lift up and jam down several times. That operation may be repeated as many as 15 or 20 times before you get a firm seat. Each time you do that your main valve opens. If there was no trip valve and your packer would leak when you first set it on the seat, you would be unable to get a satisfactory test. But in many tests in the early days, when we were introducing the tool in California, we never spudded the packer on the shoulder. We have been doing it recently since we have had these deeper holes. With a few exceptions, in the early days the wells were not nearly as deep as they are now. Before you get

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tubing closed while drawing it." In other words, he wanted to keep the fluid out of the tubing while he was putting the tubing into the well and while he was withdrawing it.

Q. He refers to the use of his device, does he not, in a flowing well or a well that will flow?

A. Yes.

Q. Now then, why would you want to avoid entrapping or carrying out any fluid in your pipe while you were pulling it out of such a well, if that is so?

A. He intended that the device—

Q. Never mind. I asked you why would it be desired in operating a device of the kind shown in the Franklin patent, in the case of a well that Franklin directs that it be put [fol. 631] into, that you should not lift any of the fluid out of the well when you pull the pipe out.

A. Franklin intended his device to be put in on the tubing in a well that flows by heads. He states that it can be used like an intermittent flowing device, that he can open and close it by hand. He doesn't want the oil to flow out through the tubing all over the workmen while it is being withdrawn and while it is being inserted in the well.

"Mr. Boyken: I move to strike that out unless it says so in the patent.

The Court: He states what he wants. Strike that out."

It is simple to put a breakable disc in to keep it from flowing while you insert the tubing, so he intended his device not only to serve that function, but also to serve the function of closing the tubing, so that it could be brought out empty and not flow on the workmen while it is being withdrawn.

The Court: What would he want to bring it out for?

A. When he was pulling the tubing, for some reason.

By Mr. L. S. Lyon:

Q. What do you pull tubing in wells for?

A. To clean out, using a sand pump—

Q. When you have tubing in a flowing well or a well that flows by head is it common practice to have to pull the tubing from time to time in the well?

A. Yes, in certain formations.

[fol. 632] Q. And is it the practice or desirable to exclude the fluid from that tubing while you are pulling it out?

A. Yes. It is desired to exclude the flowing while you are withdrawing it.

Q. As one skilled in the art, from reading this Franklin patent and studying this drawing would you understand that the Franklin valve was to be closed to entrap a sample to be lifted out of the well or was not?

A. No. Franklin teaches to construct it in such a way that you would not bring out fluid, so that it would leak.

Q. Will you point that out to the court?

A. At line 14 on page 2, Franklin states: "Between the shoulder  $b^2$  and the flange  $b^1$  there is enough room to leave a very little play vertically to the parts lying between. When the tubing is in the well the upper section is often held in suspension slightly, just to keep it taut. This relieves the disk D of the weight of the tubing, and when the device is closed the pressure of gas keeps it seated on the part C above it, so there will be no leak, and the tubing can be easily turned the half-turn necessary to open or close the valve."

In other words, he had play between those parts, so that it would turn easy, and so that the gas pressure would move the device up vertically. If the device was submerged in oil, oil could leak from the outside and between the part C and  $b^1$ , down around the shoulder  $b^1$  and in between the plates, and turn down, below or up.

Q. You say oil would leak. What would be true if the device was submerged in drilling fluid, mud fluid?

A. Any device made in accordance with this patent will leak when it is inserted into the well, and will leak when the [fol. 633] pressure of the fluid on the inside exceeds the pressure outside.

Q. When you say "inserted into the well," you mean submerged in liquid in the well?

A. Yes.

Q. And the liquid can leak from the outside in?

A. Yes.

Q. Now, what do you mean by the rest of your statement?

A. I mean that the device would allow mud fluid to pass down between the part C and the parts  $b$  and  $b^1$ , and down between the plates, and would leak, let fluid in. Especially would that happen if you had opened the valve.

Q. Would a man skilled in the art, desiring a valve structure for the purposes of the tester described in the Simmons

prior art. I am not going to go over it all because I don't think it is at all necessary in view of the testimony of Mr. Abbett.

Q. Will you please refer to the Franklin patent, Exhibit H-9? Is the device there shown and described adapted or intended for making the kind of a formation test which is the object of the patent in suit?

A. No.

“Mr. Boyken: I want to make the same objection I made before, your Honor, that Mr. Halliburton is the plaintiff in [fol. 628] this case, or one of the plaintiffs, and any statements that he may make on the witness stand are merely self-serving declarations and he is in effect arguing his own case. I think that the Court has control over the expert testimony in this case. And I object to Mr. Halliburton expressing his opinions as to what is shown in these patents which are in evidence because he is the plaintiff in the case.

The Court: No matter who a witness is, if he can convince the Court that he knows what he is talking about and is telling the truth, he should be listened to, shouldn't he? In other words, there is no legal disqualification against Mr. Halliburton, is there?

Mr. Boyken: No, your Honor. If he is testifying as to matters of fact, there is none.

The Court: I know. But what is the difference between Mr. Halliburton hiring say Mr. Smith as a patent expert to testify and testifying himself?

Mr. Boyken: It goes largely to the weight of his evidence.

The Court: Should not a court as readily believe a party to an action who convinces it that he is telling the truth as someone who is employed by him as a regular expert? I see no reason why the party himself may not testify in an expert way. As you say, there is a distinction as to the weight of the evidence. That is true, of course, and that is an important matter always. That is true. I see, however, no legal impediment to it.

Mr. Boyken: We have gone all over these patents with Mr. Abbett and opposing counsel has cross-examined him, and we are relying on what is said in these patents. Now, to have Mr. Halliburton express his opinions as an expert [fol. 629] witness is in effect arguing his own case. And,

since the Court has control of the expert testimony in a case of this kind, I want to interpose that objection.

The Court: No. I will hear Mr. Halliburton. The objection is overruled.

Mr. Boyken: An exception. And may it be understood that we enter this objection to all of his testimony?

The Court: Yes."

Q. Will you please now compare and distinguish the operation disclosed and intended in the Franklin patent from that disclosed and intended in the patent in suit and point out wherein the device shown in the Franklin patent is not adapted for the latter?

A. Franklin did not want to entrap a sample. He wanted to keep the oil out of the pipe.

"Mr. Boyken: I object to that and ask that it be stricken out as to what Franklin intended to do. The witness should be confined to what appears in the Franklin patent.

A. I will read from the Franklin patent and explain why.

The Court: Strike out the statement up to this point.

Mr. L. S. Lyon: He is testifying as an expert, your Honor, one skilled in this art, as to what this patent would teach us to do.

The Court: I think he is going too far when he says what Franklin wanted. In the first place, what he says is in his patent.

[fol. 630]. Mr. L. S. Lyon: I infer that what he means by that is what would be desired in the kind of an operation that Franklin describes in his patent."

The Court: The witness will refer to the pertinent parts of the patent for what he means. "

The Witness: Franklin states at line 20 on the first page. "My device is intended to perform the offices of two different classes of devices now in use for controlling and regulating the flow of wells, as follows: When the tubing is being put into the well or withdrawn from it, it is desirable that no flow take place through it. This is effected, so far as the placing in of the tubing, by a brittle disc, which is placed in the tubing at one of the lower joints, and which closes the tubing until it is broken, which is done after the tubing is in the well by dropping down upon it a sufficient weight to break it; but this is of no service in keeping the

patent in suit, select a valve of the type described in the Franklin patent?

A. No. Franklin describes his valve as a damper valve. He means by that a valve in which there is a disk that can move up or down, and he so states at line 92: "There are in the disk D pin-holes p p, which fit over pins p<sup>1</sup>, set in the shoulder b<sup>2</sup>, and thus the disk D is prevented from turning around, but is allowed to move vertically."

In other words, Franklin doesn't make any provision to adjust his device so that fluid cannot come in from the outside, so that fluid can leak from the inside out, and the fluid could pass into the tubing from the outside in.

The Court: From the outside where?

A. From down between the space between C and B.

[fol. 634] By Mr. L. S. Lyon:

Q. You mean from the outside, if this valve was put down under the top of the fluid in the well?

A. Yes.

Q. Then show the Court how the fluid would flow into it.

A. Your Honor, you see there is an opening between the neck of C and B here, in which, if you will follow my pencil down around the space that is white in between those parts, that is an opening—

The Court: What is that opening for?

A. Well, that opening is just a part of the structure of the device. He provides on the inside of that shoulder, which the fluid will follow around that and down between the two disks, and up through C and into the pipe.

The Court: Is this supposed to be, this space between B—and what is the other?

The Witness: And C?

The Court: No, not C, but the thing that encloses C, is that supposed to be fluid-tight?

A. No, sir. That is loose. There is nothing tight in between this space B and C, and the fluid can pass down through there, and there is vertical movement between the part D on its pins and the part C, so that there is an opening between that space. Franklin didn't care to keep any fluid in his pipe. He wanted to keep it from getting in there, and this would drain out, oil would drain out of it as he pulled it out of the well.

The Court: What is the object of B?

A. B, among other things, is cut out in such a manner, as shown in Figure 4, at b b, which cooperates with C<sup>2</sup>, a lug, and limits the rotation of the device.

[fol. 635] By Mr. L. S. Lyon:

Q. Do you understand from the Franklin patent the purpose for which he intends his device and how it would be assembled in a well?

A. Yes.

Q. Would there be any packer on the pipe which carried the valve structure?

A. He doesn't teach that there would be any packer on the pipe that carries the valve structure.

Q. From your understanding of what his device is for and how it would be used, as stated in the patent, would there be any such packer?

A. No.

Q. Would a packer interfere with the object that Franklin is directing his patent at?

A. It would, if he uses the device as an intermittent flowing device, because the packer would seal off his reservoir where he accumulates his gas to flow the oil out, that is, the space between the tubing and the casing.

Q. I show you Figure 4, entitled "Prior Franklin Patent," in the back of this copy of the brief which is Exhibit 16 in the Texas case, which was the brief filed before the Board of Appeals. Can you take that figure and show the Court or use it to illustrate to the Court how the Franklin device, as stated in the Franklin patent specification, would be put into a well, how it would be used, and illustrate to the Court the statement that you have made that the packer, if on the tube that carries the valve, would defeat Franklin's purpose?

A. Yes.

Q. Will you please do so?

A. Yes. Franklin intended that—

[fol. 636] The Court: You are referring to the figure here?

A. Yes, your Honor. I am referring to this exhibit which illustrates—

The Court: That isn't found in the Franklin patent?

A. No. However, from my study of the Franklin patent, it is intended that the device should be used that way.

## Recross-examination.

By Mr. Morgan:

Before the packer is properly seated and while you are spudding, each time you raise you close the valve and the equalizing valve opens, allowing the fluid from above to come down into the "rat-hole," if you pick it up high enough; and then when you come back again on the seat with the weight of your drill pipe and the valve is open, it will open to that drilling fluid that had previously gone down into the "rat-hole". And if you haven't got a trip valve, your sample is spoiled, unless you have pressure enough to blow it out. This is a condition that is seldom encountered.

[fol. 620] DON W. BIVENS, recalled as a witness in behalf of plaintiffs, in rebuttal, having been previously sworn, testified further as follows: —

## Direct examination.

By Mr. L. S. Lyon:

Ordinarily in spudding the packer with the Johnston tester you do not open the equalizing valve. As I explained a while ago, you make a mark across your drill pipe after you have seated your packer, with the weight of the drill pipe on the packer, and then you pick up and then spud this down again. You have a four-inch travel there in your equalizing valve ordinarily, a four-inch slide, that is, it slides inside of a mandrel. If you seat your packer, you would have to pick up 4 inches in order to open the equalizing valve. I mean 4 inches in addition to the weight of the drill pipe. In spudding you regulate the amount that you pick up so that you won't open the equalizing valve; ordinarily by picking it up within two points or something like that, if you have a weight indicator, and, otherwise, you make a mark with a piece of chalk on your drill pipe. In spudding you never raise the drill pipe far enough to open the equalizing valve. The answers that I gave at the close of my cross-examination regarding the function that could be performed by the trip valve were based on my assumption that the ques-

tions called for opening the equalizing valve when you were spudding. The way that I understood it was that he wanted to pick it completely up and spud.

[fol. 621] Cross-examination.

By Mr. Morgan:

In the spudding operation, if you pick the pipe up high enough the equalizing valve is opened. During my cross-examination by you I believe I stated that if you picked up the drill pipe high enough it would open the equalizing valve. During the recess I told Mr. Lyon that I wanted to point out something else that I didn't get a chance to. Before talking to Mr. Lyon I talked with the other boys out in the hall. I did not talk to Mr. Halliburton. I talked to the boys about the equalizing valve during the recess.

Q. When you spud you raise the pipe high enough, do you not, just so that you won't disturb the packer?

A. Well, no. You don't want to pull your packer off of the seat or disturb it. You don't have to pick up all of the weight of your drill pipe to spud, either.

Q. You pick up far enough so as not to disturb the packer, isn't that true?

A. I don't understand just exactly how you mean that.

The Court: He means that you pull it up as far as you can go without disturbing the packer, I think.

Mr. Morgan: Yes, your Honor.

By the Court:

Q. Is that right?

A. Well, I wouldn't say as far as you can go; no. As I told you, if we have no weight indicator, we make a mark and we don't pull quite up to that.

Q. At any rate, you do not exceed that mark that you make for fear of disturbing the packer?

A. That is right.

[fol. 622] The purpose of the equalizing valve is to enable one to take the packer off of the seat, to make the pressure below the packer the same as it is above the packer, and if the equalizing valve works as it is supposed to, it allows the drilling fluid above the packer to enter the "rat-hole". There have been tests made where the equalizing

valve was plugged. The equalizing valve operates, if it operates at all and for any purpose, before the packer is removed, and the equalizing valve is opened before the packer is disturbed and the fluid rushes down into the "rat-hole" and equalizes the pressure above and below the packer, making the packer more easily drawn from its seat. You have to draw that pipe up far enough so as to open the equalizing valve before you disturb the packer. You have to take all the weight off of your drill pipe and close your main valve, and then just keep right on pulling up until the equalizing valve opens. I would say that the equalizing valve opens right after the main valve closes. On the Johnston device it opens almost immediately upon the closing of the main valve. My estimation is that after you close your main valve and you are pulling your pipe up you continue to pull up until your equalizing valve is open after you have made your test. I stated a moment ago that the equalizing valve opened after the main valve closed. As to the length of time elapsing after the closing of the main valve, the opening of the equalizing valve depends upon the speed that the driller raises the drill pipe.

The Court: I think that should be an easy question to answer. Does the closing of the main valve affect the opening of the equalizing valve? Do the two things have anything to do with each other?

[fol. 623]. A. Well, the equalizing valve does not have a spring on it.

Q. That doesn't tell me anything.

A. The driller is pulling the drill pipe up like this and the main valve is closed, and then, after you have pulled on up, and supposing the action of your equalizing valve is four inches, you have to pull it up four inches more before it is opened.

Q. Let me ask you this: What operation is necessary in order to close the main valve?

A. You have to pick the drill pipe up.

Q. Does that same movement open the equalizing valve?

A. Well, your Honor—

Q. Just answer that yes or no. Can't you?

A. Your Honor, I have to explain that just a little bit, I believe.

The Court: You will have to explain it a great deal. Can't you answer that question? You know what I mean.

Does the same force or the same operation operate that closes the main valve and that opens the equalizing valve? Can you answer it?

A. I don't believe I can answer it unless I explain it.

Q. Then, go ahead and explain it.

A. If you pick up to a point where you close your main valve, your equalizing valve would still be closed, too.

Q. Then, your answer would be no, that is to say, that the action or the movement that closes the main valve does not open the equalizing valve?

A. No.

[fol. 624] Q. Then, what else do you have to do to open the equalizing valve?

A. You have to continue to pull your drill pipe up.

Q. A little bit further?

A. Yes; at least four inches.

Q. At least four inches further, and then the mere pulling of the drill pipe will open the equalizing valve?

A. Yes, sir.

Q. That is correct, is it?

A. Yes, sir.

Q. So after you have taken your test, after you have taken the contents of this "rat-hole" into wherever you want to put it, your test we will say is completed, and your next operation is to remove the apparatus from the well, is it not?

A. Yes, sir.

Q. Sometimes this packer is so firmly fixed down there that it is necessary that you equalize and that you restore the pressure below the seal?

A. Yes, sir.

Q. That is deemed good practice anyhow, whether it is absolutely necessary in all cases or not, I understand.

A. Yes. That is the principle of the tool.

Q. As soon as you have completed your test your business is to close that main valve?

A. Yes, sir.

Q. Which you do by raising up your drill pipe?

A. Yes, sir.

Q. Then by going a little further you open the equalizing valve?

A. Yes, sir.

[fol. 625] Q. Then what do you do? Do you pull away?

A. You continue to pull until your packer comes off of the seat.

Q. You pull up until something gives way?

A. Yes, sir.

Q. Or the whole apparatus comes to the surface?

A. Yes, sir.

The purpose in spudding is to get a firm seat. I wouldn't say that you have not a perfect seat before you begin to spud. This spudding business is merely a selection of the tester. If we want them spudded, we tell them to spud, and, if we don't, we just set it down. Before attempting a test, we ordinarily look at the cores that have been taken. Some formations are soft and we can't spud in them, because to do so would be to drive your packer down the "rat-hole". So you can't spud in that kind of a formation. Any tester will say that that is right. So we don't spud. We just set the packer down, open the valve, and begin the test. I would say that it is a fair answer that in fifty per cent of the cases spudding is necessary, and we only spud because we feel that we haven't completely sealed off the "rat-hole" from the upper portion of the well. If you don't get a seal, the "rat-hole" is open to the fluid in the upper portion of the well. Each time you come down and open the valve you pick up from the "rat-hole" drilling fluid that has been let into it from the upper area. In fact, this whole thing is made necessary to find out what would be in the "rat-hole" if the drilling fluid was not pressing down on it. In making a test you first go down and set your packer into the "rat-hole" seat, in using the Johnston device. Upon certain occasions you spud to effectually seal off the drilling [fol. 626] fluid from above the packer from the "rat-hole" beneath the packer. When you come down first against the "rat-hole" seat you open the main valve of the Johnston device. The opening of that valve immediately lets into the chamber above the main valve, and between the main valve and the trip valve, a certain amount of fluid. When you are running your apparatus into the well to make a test, you first set the packer on the seat to fill the upper end of the "rat-hole". You do not spud the packer when you believe you have effectually seated your packer so that there is no leak between the upper area and the formation area in the "rat-hole".

The Court: Let me ask the witness a question.

Q. In this spudding does not the valve open, that is, the main valve?

A. Yes; when you let a portion of the weight of the drill pipe on the packer.

Q. You are bound to do that, aren't you?

A. Yes, sir.

Q. And the valve opens then whenever you spud, is that correct?

A. That is, right.

After the packer is seated in the "rat-hole", if you wish to spud then you lift a portion of the weight of the drill pipe. You need not lift enough of the weight of the drill pipe so as to cause the main valve to close. If you do that, then you have taken out of the formation area the drilling fluid and other fluid that is contained there. If you haven't a good seat, when you come down again in the second spud you will open the valve and pick up that fluid again. Ordinarily, however, when the packer leaks once you just pull the tester out of the well as soon as you can. You have failed in making a test.

[fol. 627] By the Court:

Q. If, however, you went through the operations and repeated the spudding, would it have the effect that Mr. Morgan describes and would it continue to take in that fluid? If you did it once, I don't see why you wouldn't do it again.

A. Well, it just wouldn't be a test.

Redirect examination.

By Mr. L. S. Lyon:

When you have once seated the packer and then raised the pipe to spud, the weight of the drilling fluid above the packer is imposed on the packer, and the raising of the pipe for spudding does not open up the packer or unseat the packer so that you let fluid above the packer flow down by the packer into the "rat-hole".

ERLE P. HALLIBURTON, called as a witness on behalf of plaintiffs, in rebuttal, having been previously sworn, testified as follows:

Direct examination:

Mr. L. S. Lyon: If your Honor please, I am going to ask Mr. Halliburton a very limited number of questions on this

He states that it can be used as a flowing device, which we now term an intermittent flowing device, in which he flows it off and the pressure fills up, and then they will open it up and let it flow, and it flows the oil out, and he closes it again, and in that case he uses the space above the oil and on the outside of the tubing as the reservoir to receive the gas, so that when the oil comes in the pressure of the gas causes the gas to extend and force the oil down and up through the tubing and out through the packing head at the top of the well. The packing head is gas-tight, to conserve his gas for the purpose of lifting his oil.

Q. Will you point in Figure 4 to the packer that corresponds to the packer that is referred to in the Franklin patent?

Mr. Boyken: I want to again make the objection, your Honor, that they are going outside of the patent and bringing in an argument here that seems to have been made in some other court with respect to this thing. I don't think it is proper examination.

The Court: This Figure 4 is something that you prepared yourself?

A. Yes, sir.

[fol. 637] The Court: And is your opinion of what the use of the Franklin patent was; is that right?

A. Yes, your Honor.

Mr. L. S. Lyon: And this particular figure was presented in the brief to the Board of Appeals in the Patent Office and was accepted by them in their opinion.

The Court: That doesn't cut any figure here, does it?

Mr. L. S. Lyon: It cuts some figure. Your Honor will want to know—

The Court: No; I think this is too remote, for the witness to prepare something and—of course, in a way it is an elaboration of his own testimony.

Mr. L. S. Lyon: It is illustrative only.

The Court: His explanation of the Franklin patent, but if we are going to go into it at all we may be showered here with diagrams from the other side as well, showing what they figure, so, for that reason, I think it is too remote. Any further questions?

Mr. L. S. Lyon: Well, I would like to offer, your Honor, to illustrate the witness' testimony with a copy of this same

diagram, which was presented to the Board of Appeals at the time the hearing was had by them which resulted in their allowance of this patent, and I am offering it merely to illustrate what he has already verbally explained, and that is, what he, as one skilled in the art, understands to be the way in which this Franklin valve would be arranged in a well.

The Court: Let it be marked for identification.

The Clerk: That will be Plaintiffs' Exhibit 19 for Identification.

(Book of Exhibits, p. 231.)

[fol. 638] By Mr. L. S. Lyon:

Q. Do you find in this Franklin patent, Mr. Halliburton, any description or disclosure of the method defined in either claims 8 or 18 of the patent in suit?

A. No.

"The Court: It is the understanding of the Court that the entire testimony of the witness, and particularly his interpretation of the patents, is objected to on the grounds originally stated, and that you have an exception to the admission of it.

Mr. Boyken: Yes. I was making the further objection that this is not a matter of opinion, but is really the witness' conclusion whether a thing is so or not, without stating any reason for it.

The Court: That is his interpretation of the claims, I suppose.

Mr. L. S. Lyon: You asked the same question of Mr. Abbett.

Mr. Boyken: No; I didn't ask it in that way."

Q. Do you find in this Franklin patent any disclosure of a device or apparatus corresponding to that defined in either of claims 9 to 17 inclusive and 19 of the patent here in suit?

A. No.

Mr. L. S. Lyon: Is there any question that your Honor has in regard to this Franklin patent?

The Court: Yes. The Franklin patent seems to be, on an enlarged scale, as far as the valves are concerned, identical with the patent in suit. Is not that true? In other words, the opening is half the size of the circle, while in the patent

in suit there are two small openings, but the closure is made [fol. 639] and the valve operated by the same means.

Mr. L. S. Lyon: They both turn in the same way to open the ports.

The Court: Yes. Now, so far as the valve is concerned, it would seem to be the same thing; as far as I can see. Obviously, though, it was for an entirely different purpose and was used under entirely different conditions. Now, I don't know whether that would make any difference or not. Just what was this device for? Was it to get a sample?

The Witness: No, sir.

The Court: What was it for, in brief?

A. It was intended to keep the well from flowing through the tubing while it was being pulled out. It was to take the place of a baffle plate, and had the advantage of also keeping oil from flowing—

The Court: Was it merely to close the tubing while the pipe was being pulled out?

A. Yes, your Honor.

The Court: As distinguished from the purpose of taking a sample?

A. Yes, your Honor.

Mr. L. S. Lyon: And there was no packer on the device to shut off drilling fluid.

The Court: I understand that; it was not for that purpose.

Mr. L. S. Lyon: There was no drilling mud there.

The Court: It is designed merely to close the well, to prevent oil or whatnot from flowing up into the casing?

A. Yes, sir. It was intended to keep the oil from flowing up, but not necessarily to retain it. In fact he didn't want [fol. 640] any oil in it. You can see that he wanted it to take the place of a baffle plate.

The Court: All right. That is all. Go ahead.

Mr. L. S. Lyon: I would like to turn now to the patent to Edwards. I have only one or two points on each of these patents that I desire to ask.

The Court: What number is that?

Mr. L. S. Lyon: That is No. 1,514,584, Exhibit H-16.

Q. Mr. Abbett has stated that this Edwards tester is a two-string tester. Do you know whether or not a two-string tester has proven to be a practical apparatus?

A. I know that they have not.

Q. What has been proven to be the final outcome of two-string testers?

A. I have never heard of one or known one to be used. You would have to haul out an extra string of pipe and a lot of apparatus that is unnecessary with a single-string tester, and the hazard would be so great that it would be safer to set a string of casing.

Q. What do you mean by "the hazard would be so great"?

A. By the time you run the one string of pipe and circulate and rotate and try to keep that free while you run another string in, you would have a difficult job. The mud fluid circulating back up would channel and would cause abrading and cutting around the collars and stick the pipe.

Q. Then, to your knowledge, a two-string tester has never proven to be satisfactory; is that correct?

A. Yes.

[fol. 641] Q. Are there any two-string testers being used today?

A. Not to my knowledge.

Q. Do you know what is used, what testers are being used in the oil fields?

A. I know that I don't know of a single soul that is trying to advertise a two-string tester. I know that every one who is in the business is using a single-string tester.

Q. Would it be possible in the operation of this two-string Edwards device, after you have lowered the pipe 8 to expose the perforations in the bottom of that pipe, to return that pipe so as to close those perforations and entrap a sample?

A. No.

Q. Will you explain to the Court why not?

A. In order to do that you would have to turn the tubing in the reverse direction from what you had turned it, to unscrew it, and you would also have to adjust your weight so as to get your threads started, and, with the mud and everything that the threads would be exposed to it wouldn't be possible. And the fluid would then rush in between the threads and on into the sleeve and into the tube. It would provide the packing 9 at the top of the sleeve to prevent fluid from coming down, but it doesn't provide any means of packing off and keeping the fluid from getting into the tube after he has pulled the tube up in the sleeve. In Edwards' attempt to commercialize the device he shows a

knock-out plug, and that he didn't intend to bring out an entrapped sample.

The Court: The evidence is that these types of testers are the only ones in practical use, that none other have had any practical use. I think that is the evidence.

[fol. 642] By Mr. L. S. Lyon:

Q. I will ask Mr. Halliburton to identify this page from the Oil Weekly for October 2, 1925.

A. Yes.

Q. Is that a page from the Oil Weekly, an oil field publication, in October, 1925?

A. No. It is a reprint from an advertisement carried on October 2, 1925.

Q. What has this got to do, if anything, with the Edwards patent that you are discussing?

A. This shows an advertisement of the Edwards tester, a commercial device, his so-called commercial device, as advertised in the Oil Weekly on October 2, 1925.

Q. Can you point out in that advertisement the feature that you have just referred to in your testimony as establishing that the Edwards device was not designed or intended to remove an entrapped sample from the well?

Mr. Boyken: Now I object to that question and move to strike out the previous answer, on the ground that it is immaterial, and, further, that this is a reprint of some other publication, which was dated, apparently, October, 1925, and it cannot be any better than this witness' own statement.

The Court: It is inadmissible on that ground, on the ground that it is a reprint.

Mr. L. S. Lyon: I am only using it to illustrate the testimony of the witness, your Honor, that has already been given.

The Court: Objection sustained.

Mr. L. S. Lyon: I would like to have the witness, for the purpose of the record, just point out, subject to our exception [fol. 643] tion, point out at this point, and then have this filed for identification.

The Court: Very well. You may do that.

The Witness: Point out what?

By Mr. L. S. Lyon:

Q. You said that by reference to this attempt to commercialize the Edwards device, that embodied a knock-out plug, which demonstrates that the Edwards device was not intended to or adapted to receive an entrapped sample. Just point that out in this publication.

A. Yes. There is an arrow pointing to what is illustrated as a plug in the tubing, which is referred to as a knock-out plug, and on the reverse side of this sheet it illustrates how the test is made and how the go-devil is dropped in to knock out this plug, to get the sample. The device does not show a sleeve or anything that could be used to close the tubing after the sample has entered the tubing.

Mr. L. S. Lyon: We will offer this illustration which the witness has just referred to for identification as plaintiffs' exhibit.

The Clerk: Plaintiffs' Exhibit No. 20 for Identification.

(Book of Exhibits, p. 232.)

By Mr. L. S. Lyon:

Q. Now, will you refer to the patent to Cox, No. 1,347,534?

A. Yes.

Q. Do you know Mr. Cox?

A. Yes.

Q. Is this device a two-string tester?

A. Yes.

[fol. 644] Q. Is it adapted to recover an entrapped sample?

A. No.

Q. Why not?

A. Because valve 15 would permit fluid to rush into the inner tube when the packer was unseated, forcing the sample, if any was in the tube, on up to the top of the pipe. It was the practice to keep the casing full of fluid, and in the case of Cox he would be circulating fluid while he was making a test, which would keep the well full of fluid, and when he lifted his packer off of the bottom the fluid would equalize within the inner tube, and by keeping the outside of the well filled with mud fluid, the mud being heavy enough to come into the tube, it would force the sample up through the tube, perhaps to the top or someplace, and you never would know how much of the fluid within the tube came from the formation and how much was the mud fluid.

Q. You have examined all of the prior art patents and the publications that have been offered in evidence by the defendants, and you are familiar with them?

A. Yes.

Q. Do any of them describe the method defined in claims 8 and 18 of the patent in suit?

A. No.

Q. Do any of them describe an apparatus such as defined in claims 8 and 18 of the patent in suit?

A. No.

Q. Do any of them describe an apparatus such as defined in claims 9 to 17 and 19 of the patent in suit?

A. No.

Mr. L. S. Lyon: I don't think I am going to take the time of the Court to go over that, if counsel—

[fol. 645] The Court: All right. I want to ask the witness a question here. The packer as represented in this Edwards patent—

The Witness: You mean the Cox patent?

The Court: This one I am looking at now. The Cox patent, No. 1,347,534—

A. Yes, sir.

The Court: Is that shaded portion there?

The Witness: Yes, the dark shaded portion is the packer.

The Court: How are they equipped to increase its size so as to insure a seal?

A. Your Honor, if operated in accordance with the patent it most likely would seal off that plunger that is supposed to pierce the formation, along with the formation.

The Court: But is it shown how the patent is a good patent and will work the way he thinks it will work? What are his means for insuring a seal here?

A. You see, he just sets that down on the bottom of the well. He doesn't provide a "rat-hole." If he did, the packer might slip down in the "rat-hole."

The Court: Well, I would think so. What is that packer made of?

A. He describes it as a rubber packer.

Cross-examination.

By Mr. Boyken:

Q. Let us take the Franklin patent up first, Mr. Halliburton. Now, that is entitled "Device for controlling and regu-

lating the flow of oil wells." Now, what does that mean? [fol. 646] A. That means a device in which you can shut off the flow. You might say the same thing of a baffle. It controls it, keeps it from flowing.

Q. In other words, there is sufficient pressure to enable that well to flow, and this is a device for regulating such flow?

A. He doesn't describe it as sufficient pressure at all times.

Q. What causes a well to flow?

A. Well, we will take the gas that is associated and the porosity of the oil sand, and the gas is the energy that removes the oil from the sand, and in the sand it is usually in solution and comes out into the well, and it expands and lifts the oil out of the well with it, due to its greater velocity as a result of its lightness.

Q. Well, whatever the reasons are, there is sufficient force to cause the liquid to flow upward out of the top of the well; is that right?

A. Well, a well that flows at the top of the well, yes.

Q. So that if it flows out of the top of the well there is some force to send the liquid upwardly to the top of the well?

A. Yes; but we are taking a well that flows by heads, doesn't have sufficient energy released to cause continuous flow, but it will accumulate energy and flow by head.

Q. So this is a device for controlling such flow, is it not?

A. Well, yes. He states, to keep it from flowing when he is inserting it in the well, that the gas will keep disk D seated up against c, and when he is taking it out it will do the same thing, and when he has got it in the well he can [fol. 647] close it with the gas holding disk D up against c.

Q. You need not go into that right now unless it is necessary for some explanation. This is a device for controlling the flow of an oil well; is that correct so far?

A. Yes.

Q. Now, the Franklin device, according to the patent, may be inserted in the well; is that correct?

A. Yes, or out of the well.

Q. Out or in?

A. Yes.

Q. Now, let us take a case where it is in the well.

A. All right.

Q. There is a statement, commencing at line 48 of page 1, reading as follows: "My device has to be operated manu-

ally, but it may be placed deep in the well, and thereby obtain considerable advantage." Now, let us assume that case, where the device is placed deep in the well. This patent also mentions a packer, does it not? I call your attention to page 1, line 16, where it says, "but preferably within at a point above the packer." Now, let us assume this device is put deep into a well at a point above the packer. Now, in such a case what would be the object of having the packer there?

A. Well, the object would be to keep the water shut out of the well.

Q. That is, the water from above?

A. Yes.

Q. From coming down underneath the packer?

A. Yes.

[fol. 648] Q. And therefore you could obtain whatever fluid there was under the packer, you could obtain that by allowing it to flow up through the device?

A. Franklin didn't intend his device to be used that way. The water would run in between part B and part C. He didn't intend that his device be placed in water or oil.

Q. Well, I am not asking you what his intention was, but I am just asking you certain questions with respect to this structure. Let us assume this Franklin device in a deep well, and the device set above the packer. You say in such a case the packer would keep the water above from entering into the fluid below?

A. I am speaking of the packer on the casing.

Q. Any kind of a packer. This patent doesn't limit the packer to the casing, does it?

A. It doesn't say it is on the tubing.

Q. Well, it doesn't say whether it is on the tubing or on the casing, does it?

A. No, it doesn't say.

Q. Let us assume that the packer is deep down in the well and that the device is above the packer. In such a case the packer keeps the water from above from entering into the fluid below; is that right so far?

A. Yes.

Q. According to that portion of the patent from which I read, respecting the packer, it says that the device is connected with the tubing of the well above the packer, does it not, Mr. Halliburton?

A. The way I read that, it would seem to me that the packer was already in the well.

[fol. 649] Q. Well, it is below the valve, at any rate?

A. Well, it says this: "My invention relates to devices for regulating or controlling the flow of oil wells; and it consists in providing a device which can be connected with the tubing of the well either within or without the well, but preferably within at a point above the packer." In other words, the packer is already in the well. He would prefer to put it in the well and above the packer in the well.

Q. And the tubing goes through the packer, does it not?

A. The tubing goes through the packing and the packing head at the top of the well.

Q. I am talking about the packer which packs off the formation, that is, keeps the liquid from above from going below. There is a tube that passes through the packer, isn't there?

A. It appears from the patent that the packer is already in the well before you run this device or the tubing in the well.

Q. What is the object of a packer? It is to separate the fluid from above from that below, is it not, as we know the term packer. Let us get away from this Franklin patent a moment.

A. In the case of these testing devices the object of the packer is to exclude the fluid from above the zone to be tested from that zone.

Q. Yes, and there is a tubing or opening within the packer, is there not?

A. There was an opening through the pipe which the packer was attached to.

[fol. 650] Q. At any rate, now let us go back to the Franklin patent, if that is your best answer. Suppose we have the Franklin device set down into a well hole and the device located at a point above the packer. In order to cause that well to flow in the Franklin device you rotate the pipe, which opens the valve, does it not?

A. Yes.

Q. And you would open it, and then when the pipe is rotated and the valve opened, the liquid underneath the packer flows upwardly through the pipe, and if there is sufficient pressure, to the top of the well hole?

A. That would be one advantage of putting a packer on it, if there is sufficient pressure.

Q. That is sufficient for my purpose.

A. Yes.

Q. All right. Now, we have a flowing well, with the Franklin device. Suppose the pipe is rotated so as to close the valve—

A. Yes.

Q. Then you have a column of fluid, have you not, from the valve up as high as the top of the well?

A. Not necessarily so. A well will flow with—that is, a well will flow through a string of tubing and have very little oil in it. The gas carries the oil as fast as it accumulates under it.

Q. I am not talking about that. Whatever fluid there is that goes upward through your device, if you close the valve that fluid will be entrapped and extend from the valve substantially to the top of the well?

A. Yes; if it is oil and gas it will flow right on out.

Q. And if it is other fluid it will remain in that pipe?

A. Yes.

[fol. 651] Q. Now, suppose you pull up on the pipe, that is, remove the device from the well hole, with that column of fluid in there, then as you take off the drill pipe at the top you have that entrapped fluid from above the valve up to the top of the well, haven't you?

A. How much fluid is above this packer and where is your packer—

Q. I am not talking about the packer at all. I am talking about the valve after it is closed in a flowing well, and you have closed the valve, and you have the column of fluid in the drill pipe from the valve up to the top of the well, haven't you?

A. Yes.

Q. Do you understand that situation?

A. Yes.

Q. Suppose you draw up on the drill pipe as you do in a testing device of today.

A. Yes.

Q. You have that column of fluid in there, haven't you, which you gradually can take out of that drill pipe as you draw up from the position of the valve in the well?

A. I don't know. I am not so certain that it wouldn't leak out through this.

Q. You think it will leak out?

A. I know it will unless that is full of fluid heavier than the fluid within the tubing.

Q. Then the only reason that you can't take out this column of fluid is that it would leak out; is that so?

A. No. Franklin didn't design this so that you could bring out an entrapped—

The Court: Answer the question, please. Read the question to the witness.

[fol. 652] (Question read by the reporter.)

A. Yes; it would leak out and defeat the purpose that is taught in the patent.

By Mr. Boyken:

Q. It would leak out?

A. If it didn't leak out it would defeat the object of the patent.

Q. Well now, what causes it to leak out—the fact that the valve doesn't close properly?

A. The fact is that plate D will drop down from c and leave an opening, so that the fluid can run out.

Q. You mean between the two portions of the valve, that there would be an opening there?

A. Yes.

Q. Doesn't Franklin show a casing around that, a casing all the way around that valve?

A. He doesn't show any casing that wouldn't leak, and he does intend it to leak.

The Court: Doesn't what?

A. He doesn't show anything to keep it from leaking, and even if it didn't leak, as long as there was play or an opening between D and c, as he states in his patent, the fluid could pass down through the hole in c, the half-circle hole in c, and then cross over and through the half-circle hole in D, since it appears that he depends on the gas to hold them up together; so that it won't flow, and if the gas pressure or any pressure was on the inside it would force D down and the fluid would run out.

Q. When you said it would leak did you take into consideration, Mr. Halliburton, the statement in the Franklin patent at page 2, commencing at line 18, reading as fol-

lows: "This relieves the disk D of the weight of the [fol. 653] tubing, and when the device is closed the pressure of gas keeps it seated on the part c above it, so that there will be no leak, and the tubing can be easily turned the half-turn necessary to open or close the valve"?

A. I certainly did. He said the gas would hold D up against c.

Q. In other words, he doesn't want any leak there at that point?

A. The purpose of his device was not to bring out an entrapped sample, but to keep the well from flowing. He didn't want any oil in the pipe. He wanted it to take the place of a baffle plate.

Q. Let us go back again. Mr. Franklin, as expressed in his patent, did not want any leak at the point where you say the valve would leak?

A. He wanted all the oil to run back out, and he provided play there so that any that was in the pipe could get down by, so that the gas would keep D up against c, so that it would not flow or have any oil in it as he withdrew his tubing from the well.

The Court: This device is for regulating the flow of oil wells. It will be lowered into the well. It can be opened or partially opened or closed, as the case may be, and plainly will regulate the flow, when the pipe fills the well, which will be effected by the packer, as I understand it. Then we will assume that they have regulated it sufficiently, and then they withdraw the pipe, and Mr. Halliburton says that they don't want the sample or the contents that runs in while the valve is open to remain in the pipe while it [fol. 654] is being withdrawn. That is your statement, isn't it?

A. Yes, your Honor.

The Court: Then what is this for? What is the object of the whole device—to cut down the flow of the well, for instance?

Mr. Boyken: No, your Honor. In substance it is for the same purpose as the patent in suit. That is our contention. The object of the packer is to build up pressure underneath, and whatever fluid there is in that restricted area below the packer flows upwardly through the passageway, that is, the passageway through the packer, then up to the valve,

and if the valve is open it flows through the valve and up to the top of the well. That is a flowing well.

The Court: Is there anything in the patent which says the packer is to build up pressure?

Mr. Boyken: No there is not. But the packer is mentioned here, and, according to the other publications and patents in this suit, the object of the packer is to seal the formation above from below, and in this case pressure is built up underneath the packer, so that it may go upwardly through this pipe, and that is the reason there is a valve here, to regulate and control the flow that comes out through the pipe.

The Court: So that they won't get too much oil or too little oil?

Mr. Boyken: Yes; or to shut it off altogether.

The Court: There is no suggestion in the patent anywhere that the purpose is to get a sample?

[fol. 655] Mr. Boyken: No, your Honor. And in the Simmons patent in suit there is a statement that the preferred form is to have a flowing well, not the entrapping of a sample which remains in the pipe, but it says a flowing well.

The Court: Well, if the well is flowing, then the most of this comes from the formation, doesn't it?

Mr. Boyken: That is very true. It comes out of the top and they get their sample in that way. It comes out of the top and through this.

The Court: Why use the testing apparatus at all if they can do that?

Mr. Boyken: There is not always enough pressure below there in order to have the well flow because you have in the modern practice this column of mud which keeps the liquid to be tested back in the formation. It is only when that is relieved that the well commences to flow.

The Court: They use it while they are drilling to find out what they are getting?

Mr. Boyken: Yes. They can do it at that time.

The Court: I must confess I am a little bit confused about this Franklin patent. In Figure 2 I notice A<sup>1</sup>. That means, I suppose, the space within the pipe.

Mr. Boyken: That is the drill pipe from the valve portion to the top of the well hole.

The Court: Do you agree that there is no object in taking to the surface of the ground the contents of A<sup>1</sup> or the contents of that pipe after the valve is closed, that is, the chamber allowed to fill and then closed?

Mr. Boyken: If there is sufficient pressure at the bottom so that there is a continuous flow of liquid through the valve to the top of the well, you get your test in that way if [fol. 656] you desire to make a test. There is no need of taking any further sample. But, if the pressure is not sufficient, so that the flow does not come over the top of the drill pipe that is at the head of the well, then you may obtain a sample in this Franklin device.

The Court: The Franklin device is used in a well that ordinarily has no casing in it, is that correct?

Mr. Boyken: I don't know. It is of a rather early date and I don't think that the casing part has been considered in the statement of the patent.

The Court: All right. Now, if you want to make any observations, you may make them.

A. Well, your Honor, these plates D and c. and all of the numbers between, b<sup>2</sup> and b<sup>1</sup>, can move vertically and any fluid that would be on the outside of the tubing can run into the valve and the valve will not leak when the gas holds the plate D up against c. But when there is fluid in C and a less pressure against D the fluid then can run down through the opening, the half opening in c and then between the plates here and the opening in D and on down through the well tubing below.

The Court: All right.

A. That is stated at line 13 on page 2, "Between the shoulder b<sup>2</sup> and the flange b<sup>1</sup> there is enough room to leave but very little play vertically to the parts lying between." He means the parts b and c. And, if there is vertical movement of those parts, then certainly fluid can come down between the opening between b and c and around the shoulder b<sup>1</sup> and in between the plates c and D and move either up or down in the tubing.

[fol. 657] By Mr. Boyken:

Q. I call your attention to page 2 of the patent, line 32. "The disc D may be attached solid to the part B." Let's stop there. When you make the disc D solidly attached to

the part B there wouldn't be that space that you complain of, would there?

A. Yes, because it states up here at line 13, "Between the shoulder  $b^2$  and the flange  $b^1$  there is enough room to leave but very little play vertically to the parts lying between." It wouldn't make any difference if it was attached or not. He leaves room there for vertical play.

Q. When you have that vertical play, if you want to prevent the valve from leaking, what would you do?

A. I would go and get another valve, another one that wouldn't leak.

Q. How would you fix this one to prevent it from leaking?

A. I would do whatever the defendants did to it to keep it from leaking.

Q. Then, what would you do?

A. I most likely would—well, I wouldn't know what to do. You would have to fix an adjustment on it so that you could adjust those parts to a certain tension. That is one of the things you would have to do. And, in addition to that, you would have to put in packing glands, a means for packing it, and under the construction of this device in Figure 4 you would have to substitute something for a stop there in order to get a gland in.

Q. Suppose the discs B and D are solid, that is, together. Just take that much. There wouldn't be any of this leakage that you complain about, would there?

A. What parts are those?

[fol. 658] Q. I am calling your attention now to page 2, line 32, which reads as follows: "The disc D may be attached solid to the part B." Suppose the disc D is attached solid to the part B. Then this leak that you complain of would not occur, isn't that so?

A. Franklin doesn't show how you could attach the part D to the part B.

Q. Just answer the question. Suppose that was solid as I have just read to you. That leak would not occur, would it?

A. I wouldn't know how to make it that way.

The Court: That is not the question. The question is suppose it was. What then?

A. If there was a play between  $b^2$  and  $b^1$ , it would leak from the outside.

By Mr. Boyken:

Q. You are getting away from the question. I call your attention to line 32 of, page 2, where it says, "The disc D may be attached solid to the part B." Now, I am asking you, if the disc D is attached solidly to the part B, this leak that you complain of, would not occur, would it?

A. I don't know how he means to attach it. I would have to know how to attach it. The part D now is fitted in to a shoulder on B, and, even though it was welded there, as long as there was vertical play between C and D it would leak even though it was welded and became a part of it.

Q. If it was attached, there wouldn't be any vertical play between those two parts, would there?

A. I see no reason why c could not move up and down even though D was attached.

[fol. 659] Q. I am not talking about that. I am talking about the attachment now of D and B, that is, the disc D and the part B, that attachment.

A. Yes.

Q. Now, if those two parts were attached, there wouldn't be any leakage between them, would there?

A. Do you mean around the shoulder at  $b^2$ .

Q. This leakage that you have been complaining of.

A. I haven't said it leaked around the shoulder at  $b^2$ .

Q. Where did you say it leaked?

A. I say it comes around  $b^1$  from above, leakage from the outside, since there is vertical movement between  $b^1$  and  $b^2$ .

Q. Will you state again where you think the leakage would be?

A. Well, as it is now constructed fluid can leak from above down through the device. It can leak from the outside of the device between C and B, on past the shoulder  $b^1$  and between the disc D and the disc c. And, if D was welded to B, the fluid could still leak. If you held the device up by its upper end, the fluid could still leak from within the tubing down between C and D, and it could also leak from the outside around  $b^1$  and in between the two discs so long as there is provided room for vertical movement of the parts.

Q. According to the paragraph just preceding the one that I called your attention to, which, in part, in line 27, reads as follows: "the device can be kept closed while the tubing is being put into the well and then opened, and can

be again closed when the tubing is to be drawn," it is Mr. [fol. 660] Fránklin's idea, as expressed there, to close this device and to open it at various times, is it not?

A. He states that the gas—

The Court: Answer the question.

A. Yes.

Q. But your contention is that he couldn't do that?

A. No, sir, your Honor. My contention is that he could lower it against gas pressure—

Q. I am not asking you what your contention is in other respects. Your contention is that he could not close it?

A. Yes, sir; he can close it.

By the Court:

Q. If he can keep it closed, it will not leak, is that correct?

A. Well, your Honor, the gas pressure keeps it closed.

Q. Never mind that. Just answer the question.

A. Yes.

Q. If he would keep it closed, it wouldn't leak?

A. Yes.

Q. All right. That is all I wanted to know. Your contention is that it is impossible to keep it closed?

A. No, your Honor.

Q. That there is play there which will make it impossible for him to keep it closed?

A. No, your Honor.

Q. Then, I don't understand what your contention is.

A. My contention is that as he lowers it in the pressure of the gas against D keeps the plate D sealed against c.

Q. Here is the portion of the valve. That is a portion of the valve.

A. Yes, your Honor.

[fol. 661] Q. And that is not fixed to the pipe. At any rate, this portion of the valve C moves upon this portion of the valve D when you open it, is that right?

A. If the pressure is holding up against—

Q. Never mind that. I am merely going to open this valve now.

A. Yes, sir.

Q. This part C must move upon this until the openings coincide?

A. Well, no. Sometimes those parts do not touch.

Q. The openings must coincide before the valve is opened, must they not?

A. Yes.

Q. All right. How can they coincide unless the one part moves upon the other, moves with respect to the other?

A. It can move with respect to the other but D does not necessarily touch c.

Q. It doesn't?

A. No, under certain conditions. Unless there is a gas pressure to hold D up against c, it doesn't even touch it.

Q. In order to close it it has got to touch it, has it not?

A. Well, then it would only close and make—

Q. Just answer that yes or no. In order to close it the two parts must touch?

A. Yes, your Honor.

Q. Now, you say that the only thing that could close it is the gas pressure from below?

A. Yes.

[fol. 662] Q. Then, when the device is hoisted that gas pressure may not be sufficient to keep it closed, is that correct?

A. That is true.

Q. And then the valve would be open?

A. Yes.

Q. Not, of course, open in the sense that it is described in Figure 2?

A. Yes, your Honor.

Q. It would?

A. I mean it would not be open. I agree with you.

Q. For once we agree. But why wouldn't it be closed tight enough so that the liquid above could not escape?

A. Because there would be a space or an opening between them. The weight of the fluid would hold B down on the shoulder  $b^2$  and then the fluid could run out unless there was a greater pressure below to hold D up against c.

Q. Where is that place where there is a play that you have spoken about?

A. The play is the part c and D between the shoulder  $b^1$  and the shoulder  $b^2$ .

“The Court: Isn't there testimony in this case that this device was actually used?

Mr. Boyken: Yes, your Honor. We made a full-sized model in accordance with the disclosure of the Franklin pat-

ent and that full-sized model is in evidence here and was actually used.

The Court: According to the testimony of some witness?

Mr. Boyken: Yes; evidence of disinterested witnesses.

The Court: For the purpose of making a test, was it not? [fol. 663] Mr. Boyken: Yes; just to overcome this point of leakage that Mr. Halliburton has referred to; and the test showed that the device was successfully operated.

The Court: In order to operate it successfully a necessary consequence would be that it did not leak in the manner described by the witness.

Mr. Boyken: That is only common sense."

The Court: I am sure I am in some confusion caused by my inability to understand or to interpret even this enlarged figure here. I will ask a few more questions of Mr. Halliburton.

Q. The point that I have my pencil on is not given a letter, is it, anywhere in this?

A. Yes, your Honor.

Q. Where?

A. That is C.

Q. I am referring now not to the interior part of the pipe but to the pipe itself.

A. Yes.

Q. I mean the iron or steel pipe. That is C, is it?

A. Yes.

Mr. Boyken: It is a part of this here.

By the Court:

Q. When the valve is open what is there at the lower end of C, where I point my pencil?

A. When the valve is open?

Q. Yes.

A. The weight—

Q. I am not asking you about weight. This is what I mean: You notice here D is given apparently to this entire portion from this point over to here.

A. Over to there.

[fol. 664] Q. I thought this was an open space.

Mr. Boyken: Just half of that is open. We have a little model here of it somewhere.

The Court: Yes. I understand. Now, you contend that there is a space between C and D?

By Mr. Boyken:

Q. Is that where the space is that you have indicated with your pencil?

A. There is a space between  $b^1$  and C and there is a space between the outer circumference of C and D and B, and there is a space between the shoulder on B and the shoulder on  $b^1$ . So that D and c can move vertically between these shoulders at  $b^2$  and at  $b^1$ .

Q. How far could they be moved vertically as shown in this drawing, Figure 1?

A. Perhaps a sixteenth of an inch. That is not a detail drawing. It would be a space of about a sixteenth of an inch.

By the Court:

Q. According to that oil forced upward through the pipe could run around there and out and back to where it came from again, could it not?

A. It could get out around and out on the outside, yes, your Honor, but not up through the tube.

Q. Of course, not up through the tube. Would the packer have any effect on what became of that oil that might leak through that place?

A. Do you mean if the packer was on the tubing?

Q. Yes.

A. Well—

Q. Might it stop it from running back to where it came from, do you think?

A. Yes. It would keep it from running back down into the well. It would seal it off.

[fol. 665] By Mr. Boyken:

Q. Let's take the other case where the valve is now closed and you have a column of liquid extending from the valve up to the top of the well.

A. Yes.

Q. And you are then removing your drill pipe with the valve?

A. Yes.

Q. Do you think, then, there would also be some leakage and you would lose your sample?

A. If the device was constructed according to the specifications, there would be vertical movement between D and c and it would leak.

Q. You have examined the full-sized Franklin model that is in evidence here, have you?

A. Yes, sir.

Q. And concerning which the witnesses have testified?

A. Yes, sir.

Q. Have you any criticism of that?

A. I don't know whether it is made in accordance with the teachings of Franklin or not.

Q. Haven't you looked at it?

A. Yes. But I haven't had any wrench whereby I could break it up to see whether there was play in between the parts, between the shoulder  $b^2$  and  $b^1$ , as provided for in the Franklin patent. I don't know whether the device is made in accordance with the patent or not.

"The Court: All of this controversy arises over whether or not the Franklin device can raise an entrapped sample to the surface; I believe.

[fol. 666] Mr. Boyken: That is very largely the point. That is the primary point.

The Court: All right.

Mr. Boyken: And, as I understand the witness—

The Court: He says you can't by reason of this liability or opportunity to leak.

Mr. Boyken: That is the way I understand his testimony.

The Court: All right."

Q. Is that the only reason you can't bring that entrapped sample to the top of the well when you withdraw the pipe?

A. No. I think, if you ran the Franklin device in and set a packer, that is, set your packer, then, when you opened the device, even though it didn't leak while you ran it down the well, the fluid then would run from the outside into the inside of the tubing from above the packer.

Q. Suppose you had your device in a deep well and you had a flow through the device so that the liquid from below would flow over the top of the well, and you then closed the valve, in that event you would have a column of fluid from the valve to the top of the well. Now, in withdrawing that device from the well the only reason you might lose that sample, as I understand your testimony, is that the valve would leak and the sample would leak out through the portion you have pointed out?

A. No. The fluid would run into it down around that shoulder  $b^1$  and spoil your sample if it had mud fluid in it.

[fol. 667] Q. I am talking about the sample you had in the pipe from the valve up to the top. That is the sample I am talking about.

A. I couldn't answer that question without knowing something about the kind of fluid that is on the outside of the device and up to the top of the well.

By the Court:

Q. In any event, your objection would be that the fluid from the outside would run in and thereby be deleterious to the sample?

A. It would if it was used as a testing device; yes, sir.

By Mr. Boyken:

Q. And I presume the fluid inside might run out, too?

The Court: He has already said that.

By Mr. Boyken:

Q. And that is the same leakage we have been talking about, isn't it?

A. It all depends on where the fluid is on the outside of the device and the pressure of it.

Q. Let's pass on to something else. In order to operate that valve you rotate the pipe in the Franklin tool, do you not?

A. Yes.

Q. And you rotate the pipe in order to open the valve, and you rotate the pipe in the opposite way in order to close the valve?

A. Yes.

Q. Do we agree so far?

A. Yes.

Q. What different problem is presented in putting this Franklin device down into a well hole as known in the year 1882 from putting a device such as this down through rotary mud as we know it today?

Mr. L. S. Lyon: For what purpose?

[fol. 668] Mr. Boyken: Let's see what the witness says.

A. Read the question, please.

(Question read by the reporter.)

A. Do you mean just lowering it into the well?

Q. This Franklin device may be put into the fluid of the well, may it not?

A. It doesn't say anything about it.

Q. It can be used for that purpose?

A. Yes.

Q. Now, what fluid would that be?

A. It might be oil, in accordance with the patent.

Q. And it might be what else? Might it be water?

A. It doesn't say so.

Q. Well, may it be water?

Mr. L. S. Lyon: I don't think that is a proper question.  
The Court: The objection is overruled.

By Mr. Boyken:

Q. You said it might be oil. Now, tell us what else it could be.

A. I can't think of anything but oil because he says it is a flowing well and a flowing well wouldn't have anything else in it.

Q. What would be the object of a packer in it? Wouldn't that be to keep other fluids away from the oil?

A. The object of the packing would be on the casing to keep the water out of the well.

Q. I was asking you whether there was any different problem presented in putting a device of this kind through rotary mud today from what it was in the year 1882, when the Franklin device was put downwardly in the well through the fluid that may have been present in the well.

[fol. 669] Mr. L. S. Lyon: I object to that. It is not complete. We don't know what kind of a well this is being put into and we don't know for what purpose.

The Court: The objection is overruled.

Mr. L. S. Lyon: An exception.

A. Well, you could put it on a string of pipe and run it into a well now the same as you could then.

By Mr. Boyken:

Q. I am asking you if it makes any difference whether the fluid through which this is lowered is rotary mud or some other kind of fluid.

A. It would depend on the purpose for which you were lowering it.

Q. Suppose you were lowering it in order to obtain a device for controlling and regulating the flow of oil wells, as stated in this patent.

A. Then, you wouldn't run it in one containing rotary mud because a flowing well does not contain rotary mud.

The Court: I have a criticism of your answers, Mr. Halliburton. I don't want to do you any injustice at all but it strikes me that you lack a little bit in frankness and directness. Now, just say yes or no. This case is not going to depend on any one question nor on argument while you are on the witness stand. Counsel, as I understand it, wants to know in what way the operation of this device, as described in the patent, would differ from its operation today to obtain a sample below.

Mr. L. S. Lyon: That is not what he asked.

The Court: Well, that is the court's question, and answer that question. Do you understand what I am asking?

A. Yes, your Honor.

[fol. 670] Q. All right. Then answer it.

A. You would have to put a packer on it. That is about the only problem.

Q. Apparently a packer is mentioned here.

A. But the packer is not on this device. The packer is on the string of casing.

Q. Suppose that it was the only thing in the well. Suppose that it was down in a well that didn't have any string of casing in it.

A. Yes, your Honor.

Q. Would the action, as described in the patent, be any different from your patent which takes these samples?

A. Do you mean you can have a packer below the device to hold the water back from the formation being tested?

A. Yes; to hold the water or whatnot above it.

A. That is the very reason I don't believe he intended—

Q. No. I don't want what he intended. That question may not be intelligent. Is there any difference? What I want to know and what I have had in my mind for some time is what difference is there between this Franklin device and the device in the present case. I don't mind telling you that. Apparently the device in the present case is lowered into the well and the pressure in the bottom is lessened by reason of

this packer. The fluid from the bottom from the "rat-hole" goes on into it. In this case the same thing takes place, not for the same purpose at all, I suppose, and not under the same conditions because they have no mud in the well and no fluid.

Mr. L. S. Lyon: What would they put the packer in, then, for?

[fol. 671] The Court: Don't start to questioning me because that is not what I am after. I am after information.

Q. They put a packer here. Whatever that packer is for I don't know. In fact I don't know that it is shown by the patent but certainly it is for some purpose. But suppose they did have a packer just the same as the packer in your device.

A. Yes.

Q. Suppose they had that on this?

A. Yes.

Q. And you took the sample up and got it into that upper tool. Now, regardless of whether it would leak out or leak in or be hoisted to the surface or not, is the operation of your tool or your device essentially different from this?

Mr. L. S. Lyon: Why, certainly.

A. No. I would say, if you put a packer on that and ran it in the well and operated it the same as these testing devices are operated, that it would perform the same as this.

The Court: That is just what I want to know. It seems to me that that is the case. Now, whether that has any effect on this case or not, I am not saying and I am not mentioning an opinion because I have none. But, nevertheless, it seems to me that this valve is essentially the same device as the valve in the patent in suit.

Mr. L. S. Lyon: Of course, your Honor, if you are going to make all of the assumptions you make and refuse to allow us to show they are not justified, you can't reach any other conclusion.

The Court: And another question. Suppose this man back in 1882 made this device and it was successful for his [fol. 672] purposes, which was not to test an oil well at all; that he never thought of the necessity of that; that he merely wanted to regulate the flow; to make it stop or hold it down or flow or what not or to stop it altogether. Suppose that

he showed everything that is shown in the plaintiff's patent. Would the fact that he was using it for an entirely different purpose have any effect upon the situation?

Mr. L. S. Lyon: Yes, your Honor. In the first place, even if exactly the same apparatus had existed in the prior art, if no one had previously taught the practice of this method of using it for testing, then the method claims would in no manner be hindered by this earlier device. But the question might be different as to the apparatus claims.

The Court: Let me ask this further. Suppose, we will say, that Halliburton took the identical thing which Franklin had used for an entirely different purpose and claimed an invention for this purpose. That would be invention, would it?

Mr. L. S. Lyon: The method claims would still be good but the apparatus claims might not be. That is the question.

The Court: All right. I am not at all satisfied with that leaking proposition and I am not at all convinced one way or the other, and I would like to take time to examine that device that has been put in testimony.

[fol. 673] By Mr. Boyken:

Q. At the hour of adjournment last night, Mr. Halliburton, we were discussing your criticism of the Franklin patent, and that you thought that the valve would leak. Is there any statement in the patent to that effect that Mr. Franklin intended that the valve should leak?

A. No.

Q. Is that your opinion concerning the structure that is there shown?

A. Yes. My opinion is this, that, if the device is constructed in accordance with the teachings of the Franklin patent, it will leak.

Q. You do find in the patent several statements to the effect that Mr. Franklin intended that valve to close, do you not?

A. Yes. Franklin states that—

Q. Look at page 1, for instance, commencing with line 31, reading as follows: "but this is of no service in keeping the tubing closed while drawing it, and, indeed, there is no device to my knowledge, except my own, which will close the tubing while it is being drawn." That is a statement to the effect that Franklin intended that valve to close, is it not?

A. Yes. And on the second page, at line——

Q. Just a moment. I didn't ask you about any other part. I am asking you about that statement that I just read. That is a statement to the effect that Mr. Franklin intended this valve to close, is it not?

A. Yes. But he also tells how it is closed in another part of the patent.

The Court: He also tells what?

A. He tells how the valve is closed in another part of the patent. He states——

[fol. 674]. By Mr. Boyken:

Q. I am not asking you for that unless it is necessary for your previous answer, to explain it. Now, let me call your attention again to page 2, commencing at line 24, "It will be seen that my device can be operated from the top of the well by turning the tubing, as stated above; that the oil can be shut off by it or allowed to flow at will." Now, if you shut the oil off, Mr. Halliburton, doesn't that mean that the valve closes?

A. Yes; he means that he closes it against the entrance of oil into the tubing. Just above where you read he says, "This relieves the disk D of the weight of the tubing and when the device is closed the pressure of gas keeps it seated on the part c above it so there will be no leak."

And just turning and closing it doesn't necessarily mean it won't leak. He means he has to have the pressure of the gas to hold the part D up against c or it would leak.

Q. Aside from this patent, what do you think the expression means, to close a valve?

A. Well, it would depend on what valve. In this particular valve he means the turning——

Q. I am asking you for your opinion on that, irrespective of the Franklin patent. I want to know what the expression means, to close the valve. Does that signify that the valve is only partially closed?

A. No. It means that it is closed against movement of fluid through the valve in either direction, unless you define the type of valve.

The Court: Now, the valve, we will say, is closed. As I understand the witness' statement, he concedes that the

[fol. 675] valve can be closed, but he says that above the valve it leaks out. Is that correct? I am afraid to start you, because you are rather lengthy. You just stated that when the valve is closed no more oil can get up through it; that is correct, isn't it?

A. Yes.

The Court: All right. Now, there is a packer, and no more oil can get up through the packer, and therefore no more oil can go up through the well. Do you understand what I have in mind?

A. Yes.

The Court. Here is the pipe, and the valve is in that pipe, and the packer is down here somewhere. It doesn't make any difference whether it is down or below, for that matter. No oil can go up around this. But you claim that although that valve may be closed as tight as it can be that the contents of the pipe above the valve can leak out, don't you? I understand that to be your position.

A. Yes. My position is that if there was any fluid above the packer it could leak into the pipe, and my position is that if the pressure under the packer is less than the pressure of the fluid that is in the pipe, that the fluid within the pipe can leak down below the packer from within the pipe.

The Court: Leak back down below the packer how?

A. By leaking back through the valve. The valve only stops the fluid from going up and not back down.

The Court: That means that the valve is not tight, doesn't it?

A. Under certain conditions, yes, your Honor.

[fol. 676]. The Court: Well, that is the only way the oil above the valve could leak down, of course, would be that the valve couldn't be closed tightly?

A. Yes. The vertical movement of disc D will permit the gas to force D up against c, so that no fluid can enter the pipe. But the vertical movement of D downward will permit the fluid from within the pipe to pass down through the device, because D will move away from c, leaving an opening.

By Mr. Boyken:

Q. Well, let us use that illustration of the picture of his Honor's bench, and consider that to be the tubing of Franklin. The valve, as I understand it, consists of two discs.

I have two half dollars here. And those two discs are interposed in that tubing which forms the valve structure, are they not?

A. Yes.

Q. I mean just for illustrative purposes here

A. Yes.

Q. And it is the rotation of those discs one with respect to the other which opens or closes the valve, depending upon whether or not the passageways match in the turning of the discs; isn't that about the structure of Franklin?

A. Yes, with the addition that the gas pressure—

Q. I am going to that pressure in a moment. That is about the way that operates, to have these two discs inside the tubing, is it not?

A. Yes.

Q. And you rotate those discs one with respect to the other to open and close the valve?

A. Yes.

[fol. 677] Q. You talk about the pressure. You say that if the valve is placed, say, midway in this tubing, you have a pressure from below, do you not?

A. Yes.

Q. The fluid pressure from below?

A. You might have.

Q. Well, in the case of Franklin here, it would be fair to say that if it was an operating device you would have fluid pressure from below?

A. Yes, in that case.

Q. Gas would be fluid pressure, wouldn't it?

A. I would say it would be liquid.

Q. If you have a flowing well, of course there would be liquid that would go up in the top, if the valve was open?

A. Yes.

Q. What causes that pressure to come up to the valve? Isn't that the packer that is surrounding the tubing which builds up the pressure, enabling the pressure to go upwardly to the valve?

A. No.

Q. What is it that does that?

A. It is the rock pressure in the formation that builds up that pressure that forces the oil from the well up through the tubing.

Q. Did you ever hear of a flowing device which did not have a packer around the tubing?

A. Yes. I own a lot of wells that don't have the packer around the tubing.

Q. Those are wells that don't flow through tubing, however, are they?

A. Yes, they flow through the tube.

[fol. 678] Q. How far does that tubing go down?

A. My tubing goes right down to the producing sand.

Q. And the well flows through the tubing and doesn't flow around the outside of the tubing?

A. Yes; it doesn't flow around the outside.

Q. Have you your tubing in the center of the well hole, removed from the side?

A. The tubing is run into the well and packed off at the top of the well by a packing head.

Q. Suppose it was packed off down below, there would be a pressure, would there not?

A. You mean from the formation?

Q. Yes.

A. Yes.

Q. Now, let us go on with our illustration. We have the valve set at the center of this tubing, and you say there is an upward pressure from the formation below which tends to press upward against the lowermost of those two discs. Is that the way I understand your testimony?

A. Yes; and moves the disc D up vertically.

Q. That is, the lowermost of these two discs is moved up vertically from the pressure below?

A. Yes.

Q. Why doesn't that tend to hold these discs together? You say it is the column of liquid that has something to do with it?

A. Yes. So long as the pressure against disc D exceeds the hydrostatic pressure of the fluid within the well it will hold disc D up against c, but when you pull the device out of the well and get it above the fluid or pressure then the [fol. 679] fluid within the tubing can force disc D down and leak out.

Q. Let's not consider that for just a moment. We will come to that later. We have this tubing in the well and you have your upward pressure which tends to hold the two discs together and you have your downward pressure which tends to hold those two discs together. Both of those pressures, if the device remains stationary there, tend to hold

the disc one against the other for a tight valve seat, do they not?

A. No. The pressure from above does not tend to hold the disc D against c.

Q. Then, it is the weight of the pipe that does that?

A. When you are lifting it out of the well—

Q. Let's not go into that. I am assuming a case where it is stationary for the present. You have your upward pressure and your weight of the pipe down. Now, those two forces tend to hold this member together, don't they?

A. Yes.

Q. So that when it remains in the well, at any rate, the valve can be opened or closed without leakage?

A. Yes.

Q. Now, we are drawing out the device. We are pulling it upward from its normal position in the well so that the device arrives at the top of the well hole. In that case you still have your pressure from below going upward against the lowermost of these two discs, is that right?

A. Well, you do—

Q. Have you that pressure?

A. You do when you get near the top of the well. There is a time when a part of the column—

[fol. 680] The Court: Answer the question that he asked.

A. Yes.

By Mr. Boyken:

Q. You have that?

A. Yes.

Q. And, to be fair with you, it diminishes as it goes upward, is that so?

A. Yes.

Q. You still have the weight of the drill pipe down, have you not, against the discs, the top disc, which tends to hold them together?

A. No. The top disc is integral with the drill pipe.

Q. Yes; I know that. But the weight of the drill pipe is still tending to force the top disc down against the bottom disc?

A. No.

Q. Why not? You said it was so, I believe, while it was stationary. Now, what difference does it make when you withdraw it?

A. Well, it would depend on where the device was in the well.

Q. Now, we are withdrawing the device from its position in the well and I want to know why the weight of the drill pipe, which tends to press down on the uppermost of these two discs, does not still continue to force those discs together.

A. The weight of the drill pipe does not press down on those discs as you are lifting it out of the well.

Q. I am talking about the uppermost of these two discs. That is integral with the form of structure above the valve, is it not?

A. Yes. And that upper disc has tension in it because it is lifting the weight of the device and any tubing that [fol. 681] is attached to the lower portion of the device out of the well.

Q. Now, it is the lifting of the pipe, then, that tends to pull the upper disc away from the lower disc in removing the device? Is that the way I understand your answer?

A. Yes. When you suspend the device through the upper disc c, why that is against shoulder  $b^1$ ; and, unless pressure is holding D up against c, why c would be resting on shoulder  $b^2$ .

Q. That is enough of that unless you feel it is necessary for your answer. You say that the pulling up of the drill pipe tends to relieve that pressure of the two discs. I think we are agreed so far. Now, doesn't the weight of the column of liquid that is in that drill pipe above the valve tend to press the two valves together, that is, the two portions of the valve together?

A. No. The weight of the column of fluid within the tubing tends to force C down on shoulder  $b^2$  and separate the two discs.

Q. If we have two discs as I have illustrated them here by these half dollars, and you have a column of fluid above the uppermost of these discs, extending to the top of the well hole, doesn't the weight of that column tend to hold those two half dollars in this illustration together?

A: No, because your upper disc has a hole in it and it lets the pressure through that half circle be exerted on lower disc D.

The Court: All right. That is enough.

By Mr. Boyken:

Q. As I understand you, this half dollar, which I am using for illustration, has a hole in it. Now, I am not talking about the pressure that is exerted through this upper- [fol. 682] most half dollar and through the hole. I am talking about the weight of the fluid that is bearing on the portion of the valve which has no hole in it. What about that?

A. That would not exert a downward pressure on D. because the hydrostatic pressure is in all directions. And, since there would be a space between D and c, it would also exert an upward pressure on c.

Q. I am not talking about the upward pressure now. I am talking about the downward pressure, that is, the weight of this column of fluid. The weight of that column of fluid would tend to hold these two discs together except in that small area, which is probably a third or a fourth of the size of the disc, where there is a hole?

A. No.

Q. You don't agree with that?

A. No.

The Court: Are you and the witness agreed that there is play up and down between the two portions of the valve? In other words, the witness contends that the lower portion of the valve is movable up and down. That is your contention, isn't it?

A. Yes, sir.

The Court: Now, do you agree that that is movable up and down?

Mr. Boyken: Yes, your Honor; in one form. In the form that is shown in the drawing of the patent there is a slight up and down motion.

Q. So far we have been talking about the movement of these two discs in respect to each other, that is, this slight play. You are aware are you not, that there is a different [fol. 683] construction which is mentioned in the patent, that is, page 2, line 32, where it says, "The disc D may be attached solid to the part B"? I am going to stop there. The disc D is the lower disc in our illustration. Now, if that is attached solid to the part B, which is the illustration

here is the pipe corresponding to this, there would be no play, would there?

A. Yes; there would be a play of the disc C between D, which is solid with B, and the flange at b<sup>1</sup>.

Q. In other words, if we got away from this slightly floating disc and made the device as in the Simmons patent, for instance, where there is no floating disc, but each disc member is integral with the portion of the structure, then in that case there would not be any of this separation of discs as I understand this disclosure?

A. Yes. Assuming that you made it like the Simmons patent, there would not be.

Q. Now, taking the alternative structure to which I have called your attention, in such a case, in order to have a valve structure, there would be no separation between those valve members?

A. Yes, there would be a separation, because at line 13 on page 2 it says: "Between the shoulder B<sup>2</sup> and the flange B<sup>1</sup> there is enough room to leave a very little play vertically to the parts lying between." So the part C is lying between the shoulder B<sup>2</sup> and the flange B<sup>1</sup> and could move vertically.

Q. Do you think that if you take this form which I have called your attention to, described commencing at line 32, [fol. 684] page 2, and it intended to have a valve, do you think there would be any leakage in such a valve?

A. Do you mean and make it in accordance with the teachings of the Franklin patent?

Q. No. I am asking you to confine yourself now to that structure which I have just called your attention to, namely, the disc D may be attached solid to the part B. Now, when you attach it solid and you want a valve structure, would there be any leakage?

A. It would depend on how you constructed the rest of the valve.

Q. You could construct it so there would be no leakage, could you not?

A. Yes.

Q. I asked you last evening before adjournment if any different problem was presented if a testing tool was lowered through oil, for example, as against lowering a testing tool through rotary mud.

"The Court: You are referring to this Franklin patent, are you?"

Mr. Boyken: Well, I will be willing to confine the question to the Franklin patent. Let me reframe it.

The Court: The question is clear, I think.

Mr. Boyken: I thought so.

Mr. L. S. Lyon: I don't understand what you mean by a different problem.

The Court: Whether ~~any~~ different problem is presented, greater difficulty, I suppose, in lowering through oil, than that encountered in lowering through fluid.

Mr. L. S. Lyon: Is that what it means, is it harder to put one down through oil than it is through mud?

[fol. 685] The Court: I suppose, or easier."

A. I think I understand it, if you mean just the lowering of a device in the well. I don't think that the problem would be any different. You would use the same machinery and everything.

Q. Now, if you drill by the rotary method it is always necessary that drilling fluid be present in order to complete your drilling operation; is that so?

A. Yes.

Q. And in drilling by the rotary method do you always use this so-called rotary mud that was described here?

A. Well, you use a drilling fluid. Sometimes it may be that you are drilling through a formation that naturally makes a mud of the proper consistency. If it doesn't, then you admix to it to make it a mud fluid.

Q. What do you mean by "natural mates" in connection with the drilling of an oil well?

A. What did I mean?

Q. You used the expression "natural mates," and I want to know what you mean by that.

A. Natural mix.

Q. I understood you to say "natural mates," but if you said "natural mix" that will be all right for me. What expression did you use in your last answer?

A. I said that the formations encountered in drilling in some localities, that is, I meant to say that, are of such a nature that it makes a mud fluid of the proper consistency without adding admixtures such as weighting material and baroid as a suspensoid.

Q. In other words, under those conditions there is no necessity of injecting this so-called rotary mud that has [fol. 686] been described here? Is that the way I should understand your answer?

A. I don't understand your question.

Q. Let me reframe it. I take it from your last answer—and if I am not correct I wish you would correct me—that there are occasions where the drilling fluid is naturally in the well and there is no necessity of injecting any outside drilling fluid in order to assist your drilling operation?

A. Yes.

Q. Do you at times use oil as your drilling fluid, in drilling a well by the rotary method?

A. Well, I never have used oil. Sometimes after the casing has been set and they are drilling in the oil sand, then they will remove the mud fluid and use oil to circulate, instead of mud, in order to keep from getting the pressure of the mud fluid on the sand. But I only know of one or two localities where they do that, and that is where the oil is contained in a very porous formation, with fissures, and the weight of the mud fluid drives the oil away, and they use oil instead of mud fluid and drill in under pressure, packing off the drill pipe at the top of the well.

Q. In those one or two cases which you speak of, then, oil is used as the drilling fluid, under the circumstances just related by you?

A. Yes.

Q. Now, what is the reason for the use of drilling fluid when a well is drilled by the rotary method?

A. Well, the drilling fluid performs several functions. First, it is an agent that removes from the well the cuttings as fast as the bit cuts the hole. It also produces a hydro-[fol. 687] static pressure that confines any cognate fluid in any formation encountered in its respective formation; and it also plasters by building up a sheath on the formation, and its hydrostatic pressure exerted on the walls of the formation keeps the formation from caving in. So it is really very necessary and very important.

Q. You have heard the testimony here, Mr. Halliburton, with regard to the use of the so-called full-sized Franklin device in the oil fields of California, recently?

A. Yes.

Q. Do you consider that such use is an infringement of the Simmons patent here in suit?

Mr. L. S. Lyon: I object to that, your Honor, on the ground that that is asking the witness for a legal opinion, and, further, that he doesn't necessarily accept the testimony that has been offered here. He was asked yesterday if he understood how this thing was set up, whether it was set up so that it operated in the way the Franklin patent discloses, without play or not, and he said he didn't know.

Mr. Boyken: I want to find out, your Honor, to what breadth this witness expects to extend the Simmons patent.

The Court: Well, I think it is asking him for a legal opinion. I don't think you can do that. If counsel were on the witness stand you might properly ask it. Objection sustained.

Mr. Boyken: I would like to take the answer to that, as Mr. Lyon has taken it, taken the answers to other questions, if your Honor will permit it.

Mr. L. S. Lyon: The witness may not have an answer, your Honor.

[fol. 688] The Court: Well, we will find out. You can answer the question for the purposes of the record.

A. If the Franklin device is so modified by the addition of a packer and used in accordance with the teachings of the Simmons patent, I would say that it was an infringement.

By Mr. Boyken:

Q. Now, let us take up the Edwards patent. That is Edwards patent No. 1,514,585. That is the second patent you discussed yesterday on your direct examination. I understand that is a two-string tester; is that right?

A. Yes.

Q. What is the purpose of the outer string which is designated by the number 1 in Figure 1 of the patent drawing?

A. It is one of the elements of the Edwards device, so that he can provide for circulation.

Q. So that he could establish circulation or maintain circulation; is that right?

A. Yes, while he is taking a test.

Q. According to the patent, why does Edwards want to maintain circulation?

A. He wanted to maintain circulation, he says in the patent, so that the tester wouldn't stick and also to provide for rotating the outer pipe 1.

Q. That is to say, rotation in rotary mud, if it be that kind of drilling fluid used?

A. Well, he provides for a circulation of the drilling fluid down between pipe 1 and pipe 8, and he would be circulating at the same time he was taking a test, by pumping up outside.

[fol. 689] Q. In other words, while the test was being taken rotary mud could be circulated in the hole above the packer; isn't that what the patent says?

A. Yes.

Q. All right. Now, this Edwards device is adapted for making a test by lowering the test tube through rotary mud in the drilling of an oil well?

A. Yes.

Q. And, as I understand this patent—and correct me if I am wrong—the testing device of Edwards is lowered down through rotary drilling fluid to the point where the test is to be made; is that the way it is described here in the patent?

A. Well, yes, just above the point.

Q. Just above the point. Then the packer is set; is that the next step?

A. No. The packer is run into the well before the test tube is put in the well.

Q. The packer comes in first with the pipe 1, and then the tester is inserted later?

A. Well, the test tube, yes.

Q. Then what, if anything, has the pipe 1 to do with the tester?

A. The pipe 1 carries the member designated as 4, so that there is a seat for sleeve 7.

Q. Does the pipe 1 perform any function in the testing operation other than providing the seat to which you have just called attention?

A. Yes; it carries the packer.

Q. It carries the packer?

A. Yes.

[fol. 690] Q. Do I understand from your direct testimony that you consider a two-string device of this kind to be impractical?

A. Yes.

Q. In your application for patent, the file wrapper of which is in evidence here, and which application was abandoned, didn't you show a two-string device yourself?

A. I don't remember. We may have provided an inner pipe just above the valve to extend part way up, so that fluid could be put between that pipe and the test string to partly overcome the hydrostatic pressure on the outside of the pipe, but not for any purpose shown in any of the patents in the prior art. I don't remember whether that application contains that or not.

Q. Irrespective of your reasons, it was a two-string device that was shown in your abandoned application, was it not?

A. No.

Q. It was not a two-string device?

A. No.

Q. Will you look at that drawing? Now, in the drawing that is attached to that patent, I call your attention to the figure at the left-hand side, and point to the protrusion of what appears to be the second or inner string of pipe which extends downwardly to the bottom of the well hole, and then also to the figure immediately to the right of that, which shows that inner string of pipe coming partially upward. Isn't that one string of pipe within another?

A. It never was intended that the inner string of pipe should extend to the top of the well.

[fol. 691] Q. I didn't ask you that. I am asking you if that isn't a two-string device, in so far as it is extended.

A. Yes, it would have two strings so far as it is extended.

Q. According to your drawing, it extends a considerable distance from the bottom of the well hole, does it not? Just take another look at that drawing.

A. Well, of course the pipe is cut away, and this is not drawn to scale, but it was only intended—

The Court: Just answer that question. The record is filled up with matter that is not responsive to the questions.

A. No.

By Mr. Boyken:

Q. Doesn't this drawing and the figure to which I have called your attention show the inner string of pipe extending all the way up to the very top of the outer tube, as shown in the left figure of that drawing?

A. No, it doesn't show it all the way from the bottom to the top.

Q. You mean on account of the break that is between?

A. It doesn't show that it passes through the break.

Q. But it does show at the top, does it not? I wish you would bring that over here so his Honor can see what I am referring to. We are talking about two-string devices. I am now calling your attention to the figure at the left of the drawing attached to Defendants' Exhibit A, and ask you if that does not show one pipe within another, and I am pointing now to the top of that figure which shows one pipe within the other, and also to the figure immediately to the right of that, which shows one pipe within the other [fol. 692] extending up a portion of the entire distance of that figure. Do you see that?

A. Yes. I don't understand that it shows that pipe at the top.

Q. Well, let us take it gradually. You see the second figure on the left-hand side there, which does appear to have one pipe within the other. Do you agree with me so far?

A. Yes.

Q. The pipe I have just called your attention to, which seems to be marked by the number 41, is also in the left figure and extends downwardly to the tool, as shown at the top of the left figure, where the inner pipe extends beyond and above the outer pipe? Do you agree with me so far?"

A. I don't know whether that is intended to show that or not.

Q. It is your patent application, is it not?

A. Yes.

Q. And you know, don't you, Mr. Halliburton, that there were two strings, one within the other, extending a portion of the way up to the top of the well?

A. Yes.

Q. All right. Now, this break which appears in the left figure, that may be one foot or a thousand feet in there, may it not, according to this drawing which is in your patent application?

A. Yes.

Q. In so far as one pipe is within the other, whether it be 5 feet or several thousand feet, there are two strings, are there not, there?

A. Yes, as far as it extends up into the two strings.

[fol. 693] Q. According to the showing of these two figures in the patent it would appear to extend up about three-quarters of the way?

A. I would have to read the specification. In this patent application I provided an inner pipe that would go just above the testing tool, so that I could put enough fluid, say a thousand feet in a seven or eight thousand-foot well, between the two pipes to overcome the hydrostatic pressure on the lower end of the drill pipe, and at the same time have a sample pass through this thousand feet of inner pipe and above that, so that I could get a sample and provide a safety factor for the collapsing of the drill pipe.

The Court: There is casing in that drawing?

Mr. L. S. Lyon: This figure over here does not show any either from here to here, this pipe 41, but somebody somewhere put a little thing up here at the top, and the question Mr. Boyken is after is whether this pipe here, this pipe 41, which doesn't appear in here at all, actually was intended to run clear to the top of the well, because here it is sticking out here.

The Court: How could he get the fluid into it?

Mr. L. S. Lyon: How would you get that mud fluid in there?

A. That is connected onto the top of the testing apparatus so that when the valve is opened it passes up through that inner tube for a thousand feet, we will say, in a deep well, and then right into the drill pipe, and it wasn't intended that the inner tube extends up any further than was necessary to hold the fluid in the device high enough to counteract a part of the hydrostatic pressure against the pipe.

[fol. 694] Mr. L. S. Lyon: Now, you might make that simpler. That was just down to this part to prevent the collapsing of the pipe?

A. Yes.

By Mr. Boyken:

Q. And that might be a matter of a thousand feet or so?

A. Well, I think the file wrapper will show how far it was intended to come up.

Q. Now, some question has been raised with respect to whether or not an inner pipe is shown in the left figure.

This is the outside of the pipe as it is supposed to be shown here, is it not?

A. Yes.

Q. There is no question in your mind, is there, that there is an inner string of pipe that goes downwardly to the tube itself in the left figure of that drawing?

A. Well, the drawing is not a dimension drawing and I don't know how long it is. It would appear to be at the top if there was something to show that there was a pipe.

Mr. L. S. Lyon: Do you say this is the top?

Mr. Boyken: This is the bottom and this is one section and this is the other section and this is the top. You go from the bottom up to this point and then take the next figure and go up to that point.

Mr. L. S. Lyon: Then, you don't contend this pipe goes to the top of the well?

Mr. Boyken: No. But I do contend it goes all the way in from that first figure, which may be a thousand feet or more.

A. It shows it to be three joints.

[fol. 695] By Mr. Boyken:

Q. At any rate that inner pipe extends upwardly from the tube?

A. Yes.

Q. And upwardly as far as necessary?

A. Yes.

Q. I want to ask you, Mr. Halliburton, how does Edwards, as set forth in his patent, effect the final seal-off of the drilling fluid before he makes a test?

A. By seating sleeve 7 in a part marked 4 and by having the perforated part screwed up into the sleeve 7.

Q. Let's take up the next patent you considered on your direct examination, which was the Cox patent, No. 1,347,534. That is a device shown there for the testing of oil wells, is it not?

A. Yes.

Q. And it particularly mentions wells drilled by the rotary system, does it not? I call your attention now to page 1, lines 10 and 11.

A. Yes.

Q. So he contemplates making a test in a well drilled by a rotary system, is that so?

A. Yes.

Q. And he intends to make the test while the well is filled with rotary mud, does he not?

A. Yes.

Q. And the test tube or the testing device is lowered down through that mud?

A. Yes.

Q. And the object, as set forth on page 1, lines 9 to 29, is to obtain a sampling test of the oil that may come from the formation?

A. Yes.

[fol. 696] Q. Just how is the object which is sought to be attained by the Cox patent any different from the object sought to be attained by the Simmons patent here in suit?

A. Well, there is quite a bit of difference. Cox provides for a circulation and two tubes. He provides that the plunger 7 break a disc 13a.

Q. Just a moment. You are describing the structure. I am asking you the object sought to be attained, which doesn't call for any structure. I want to know if what Cox wanted to do is any different from what Simmons wanted to do. And you can confine yourself to both patents in answering that question.

A. Yes; Cox wanted to get or secure a sample.

Q. I am asking you if the object which Cox sought to attain is the same object as Simmons sought to attain. And in answering that question you can confine yourself to what both patents say.

A. They both sought to obtain a sample.

Mr. Boyken: I want to get a yes or no answer if I can.

The Court: Yes. Answer it yes or no, Mr. Halliburton. Answer that by yes or no.

Mr. L. S. Lyon: No.

Mr. Boyken: I don't think counsel ought to prompt the witness.

The Court: Don't interrupt now. The witness is directed to answer by yes or no. He declines to do so. Ask another question. Let the record note that and we will go on with something else.

Mr. L. S. Lyon: He hasn't declined, your Honor. He is trying to consider what to say.

[fol. 697] The Court: He is directed to answer again.

Mr. L. S. Lyon: All right. If you will give him sufficient time, he will answer.

The Court: Let the record stand as it is now. Proceed.

By Mr. Boyken:

Q. I am going to read to you from page 1 of the Cox patent, commencing with line 9, and ask you to carefully note this because I am going to ask you if the object as set forth in the portion I read is not the same object that Mr. Simmons seeks to attain by his patent. "This invention relates to improvements in well drilling, particularly to wells drilled by the rotary system, and in such connection it relates more particularly to a device for testing wells in order to ascertain if oil, water, gas and other liquids are under the path of the drill or in proximity thereto, that is, the stratum which has not been disturbed or only partially disturbed by the drill bit; to provide means for procuring and bringing to the surface a small quantity or sampling test of such oil, sand, water, or whatever is in the path of the drill bit, for inspection and analysis; and also to provide an efficient and satisfactory means for complete separation of the water, mud, slush, et cetera, in the hole above the point from which the test is to be taken from the quantity to be investigated and analyzed, to thereby arrive at an accurate determination of the value of the drilled hole." Now, I am asking you if that portion that I read to you in the Cox patent does not state the same object as is sought to be obtained by the disclosure of the Simmons patent here in suit.

A. No. That states a part of the sand and it is not intended in the Simmons invention to bring out any of the sand.

[fel. 698] Q. If you substitute "oil" there, which appears in the portion that I read, then it is the same, is it?

A. Yes; with that assumption.

Q. In other words, if the Cox patent desires as an object to sample the oil as distinguished from the sand, then the object is the same as that sought to be obtained in the Simmons patent? Is that your answer?

A. Yes. He wanted to get a sample.

Q. No. I didn't ask you that. With the exception of the substitution of "sand" for "oil" are the objects the same? Do you understand that question?

The Court: I understand him to have answered that in the affirmative, that it is the same except that the Cox patent might call for oil.

By Mr. Boyken:

Q. I call your attention to the title of this patent, Mr. Halliburton, where it says "Device for testing wells for oil, gas, &c." Have you taken that into consideration?

A. Yes.

Q. Isn't the sand that you speak of in suspension in some liquid?

A. No; I don't think that Cox intended that it be in suspension. I think that he intended to get a part of the bottom of the well.

Q. Do you think that would be dry at the bottom of the well? Wouldn't it be in some kind of liquid, oil or something else;

A. Yes. It would be saturated with oil.

Q. Saturated with oil?

A. Yes; and water if water was in the formation.

Q. As I understood your direct examination, you said that in the use of this Cox device when you picked up on [fol. 699] the drill string you would obtain drilling fluid in the sampling chamber as well as the sample itself, is that correct?

A. Yes; when you release the packer.

Q. In other words, the sample from the formation would first go upwardly in the test tube or test string designated by the number 15 in Figure 2, and afterwards the drilling fluid would go up there, following the formation which was tested?

A. Yes.

Q. So that there would be the two, that is to say, the fluid from the formation and the drilling fluid, in the same test string?

A. Yes.

Q. Doesn't that always occur in testing where you have drilling fluid and formation fluid in the same chamber?

A. No; not from above the point where the packer was seated.

Q. Just what do you mean by that?

A. I mean that the present testing devices, such as the Simmons and Johnston devices, do not permit the fluid that

is above the formation or above the packer and on the outside of the pipe to enter the test string.

Q. But in the case of the Cox device, as disclosed in this patent, it is the drilling fluid from the formation below the packer which first ascends in the testing string 15, or I think that is 13? I am not sure whether the drawing shows 13 [fol. 700] or 15, but you see the drilling string that I mean.

A. No. The drilling fluid up above and surrounding the pipe rushes down around the packer and into the test string. That doesn't happen in the Simmons device.

Q. According to the disclosure of the Cox patent it is intended that that packer should operate to seal off the formation above from below the packer, is it not?

A. Yes.

Q. Suppose that packer seals off that formation and then the valve is open so that the fluid from below the packer goes upwardly in the test tube, I understood you to say that in that event the drilling fluid followed that upwardly by the release of the packer?

Mr. L. S. Lyon: Is there a question, your Honor?

By Mr. Boyken:

Q. Is my statement correct or do you differ with me?

A. Yes; the drilling fluid would follow.

Q. The fact that the fluid to be tested and the drilling mud are in the same chamber, in this case in the tube designated apparently by 15, is that detrimental to the test?

A. Well, you wouldn't know whether you had a test or not perhaps.

Q. Then, is your answer yes or no?

A. I would say it is detrimental.

Q. In every test that is made, take, for instance, the Simmons tool with the "rat-hole" packer, don't you in the same chamber have the drilling fluid and the rotary mud which comes out of the "rat-hole"?

A. Yes; we have the rotary mud that comes out of the "rat-hole" but we know how much that is.

[fol. 701] Q. You know how much that is?

A. Approximately; yes.

Q. Can't you segregate the rotary mud from the formation fluid?

A. Yes.

Q. You can identify the rotary mud from the sample, can you not, if the two are in any kind of a chamber?

A. Well, if the sample didn't have to be rotary mud, you could; yes.

Q. If it was anything but rotary mud, you could identify the two, and, if it was rotary mud, it would be all the same, would it, that is to say, that the fluid in the chamber would be all of one kind rather than separate?

A. Yes.

Q. Does the sample which is entrapped in this Cox device come from below the packer?

A. Yes.

Q. And, if there is such a sample entrapped, does it come from the formation which is below the packer?

A. Yes.

Q. I notice that in both the Cox patent and the Edwards patent there are two-string devices, whereas, on the other hand, the Simmons patent has a one-string device. The object of the two-string device, as I understand, is to establish this circulation and keep the circulation?

A. Yes.

Q. In the case of your new "J" tool you also make a provision for re-establishing circulation, do you not?

A. No; not while we are taking a test.

[fol. 702] Q. But after the test is being taken you may establish circulation according to the "J" tool?

A. Yes. But that would destroy the test.

Q. But, whether or not it destroys the test, you can establish the circulation?

A. Yes. We provide a circulating valve and also provide a circulating valve with the stop cock and gear device.

Q. Do you consider it an improvement to eliminate the circulation which is shown in the Cox and the Edwards patents while making your test?

A. Yes.

Q. Then, under those circumstances, if you consider it an improvement, why did you in your "J" tool provide means for establishing the circulation?

A. That was for an entirely different reason. Cox and Edwards provided a circulation to keep the pipe from sticking. We provide circulation to keep the well from blowing out.

Q. But in either event it is circulation, is it not?

A. Yes. But only in an emergency do we circulate with the Simmons device.

Q. I am quoting from claim 9. "Apparatus for testing a well." You find apparatus for testing a well in the Cox patent and in the Edwards patent?

A. Yes.

Q. Continuing, "comprising a string of pipe to be lowered into a well." Do you find a string of pipe adapted to be lowered into a well in Cox and in Edwards?

A. Yes; a string of pipe to be lowered into a well; in fact two strings.

Q. There are two strings, any one of which may be a string?

A. Yes.

[fol. 703] Q. In the Franklin patent also, eliminating the testing element, do you find a string of pipe to be lowered into a well?

A. Yes.

Q. Continuing, "having an inlet at its lower end." Now, you find, do you not, in Cox, Edwards and Franklin an inlet at the lower end?

A. Well, in Cox and Edwards there are two inlets and in Franklin just one inlet; not just an inlet but two inlets.

Q. Any one of those may be an inlet, may it not?

Mr. L. S. Lyon: That is argumentative.

Mr. Boyken: All right. I will withdraw that question.

Q. "and carrying a packer." You find, do you not, in Cox and Edwards that the device carries a packer?

Mr. L. S. Lyon: That is not what the claim says. Are you asking him what the claim says or some other question?

The Court: Let the witness answer.

A. Yes; Cox and Edwards carry packers.

By Mr. Boyken:

Q. Continuing, "a packer adapted to be positively pressed against the walls of the formation." Does the packer in Cox and Edwards press positively against the walls of the formation? Doesn't the packer in Cox and Edwards press positively against the walls of the formation?

A. Yes.

Q. Continuing, "to seal off the same above the inlet." Doesn't the packer in Cox and Edwards seal off above the inlet?

A. Well, yes.

[fol. 704] Q. Continuing, "and a valve for the inlet positively controlled by movement of the pipe to open and close the inlet while the packer is seated." In the case of Franklin do you not find a valve for the inlet positively controlled by the movement of the pipe to open and close the inlet?

A. Yes.

Q. While the packer is seated?

Mr. L. S. Lyon: In what case?

By Mr. Boyken:

Q. In which one of those three patents does that occur?

The Court: Mr. Lyon, don't interrupt counsel. If you have an objection, you may state it.

Mr. L. S. Lyon: I object to that on the ground that the witness has not been asked or given an opportunity to state whether there is any packer on this pipe in the Franklin device.

The Court: My recollection is that he has already answered the question in the affirmative.

Mr. L. S. Lyon: Not in regard to Franklin. That was kept out of the question, your Honor.

The Court: Read the question, Mr. Reporter.

(Question read by the reporter.)

Mr. L. S. Lyon: If your Honor please, my objection is this—

Mr. Boyken: I am going to reframe the question to eliminate this argument.

The Court: Wasn't the element of while the packer was seated in the first question?

Mr. L. S. Lyon: No.

Mr. Boyken: It was in the first portion of the question; yes.

The Court: And he answered it yes, didn't he?

Mr. L. S. Lyon: No, your Honor.

[fol. 705] The Court: Well, never mind. We won't take up the time with it. Proceed with your questions.

Q. Referring to this last portion that I just read from claim 9, which concludes the claim, that element in itself, do you not find that in Cox and in Edwards?

Mr. L. S. Lyon: What element is that? I object to that.

Mr. Boyken: I just read it.

The Court: Well, repeat it.

Mr. Boyken: All right. I will repeat it now.

Q. At the end of claim 9 it says, "and a valve for the inlet positively controlled by movement of the pipe to open and close the inlet while the packer is seated."

A. No: I don't find that in Cox or Edwards.

Q. Why don't you find that in Cox or Edwards?

A. Cox does *does* not show a valve that can be opened or closed by a movement of the pipe.

Q. What about Edwards?

A. And Edwards does not show a valve that can be opened and closed by a movement of the pipe. Edwards can be opened by movement of the pipe if you call the sleeve 7 and the tube 8 a valve. Then it can be opened but it can't be closed by movement of the pipe.

Q. If you consider in Edwards the tube 8 as the pipe, doesn't the upward movement of that pipe close the inlet to the pipe?

A. No: I wouldn't say that that would close it.

Q. You don't think so?

A. No.

Q. What does Edwards say about that?

Mr. L. S. Lyon: Do you mean in the patent?

[fol. 706] Mr. Boyken: In the patent.

A. Edwards doesn't say anything about closing it. He says you pump the oil out if it will not flow out.

Q. Look at page 1, commencing with line 105 and down to line 110, where it says, in line 108, "and the test stem is then withdrawn before withdrawing the drill pipe and packer." The upward movement of that inner tube there so that the perforated openings are within that sleeve will close that valve member, will it not?

A. No. He provides a packing at 9 above, which would keep it from leaking down between the sleeve 7 and the tube 8, but he doesn't provide any such packing at the bottom of sleeve 7 to keep it from leaking up through the sleeve 7 and into the perforations.

Q. Then, what about Franklin? Don't you think that Franklin shows a valve for the inlet positively controlled by movement of the pipe to open and close the inlet?

A. Yes; he shows a valve.

Q. And that valve that Franklin has is positively controlled by the rotary movement of the pipe?

A. No. That, in combination with the pressure of gas against the plate D, closes it and seats it.

Q. That closes the valve?

A. Yes.

Q. Very well. I want to do the same thing with this method claim and then I will be concluded. I am going to take the method claim No. 8, for example, of this Simmons patent. It says, "A method of testing the productivity of a formation encountered in a well containing drilling fluid." Don't Cox and Edwards show a method of testing the productivity of a formation encountered in well-drilling?

A. Yes.

[fol. 707] Q. That is, encountered in a well containing drilling fluid?

A. Yes.

Q. All right. Continuing: "which includes lowering an empty string of pipe into the well through the drilling fluid to adjacent the formation." That is true; again, of Cox and Edwards, is it not?

A. Yes. They both lower an empty string of pipe but they also lower another string—

Q. You have answered my question. It is also true of Franklin, is it not, that an empty string of pipe is lowered into the well through the drilling fluid adjacent the formation?

A. Well, an empty string. But he does not state that he lowers a valve adjacent any formation.

Q. But he does say it may be put deep in the well, does he not?

A. Yes.

Q. Continuing, "the pipe carrying a packer." I am going to pause there. In Cox and Edwards there is a packer shown, is there not?

A. Yes; there is a packer.

Q. All right. "and having a valved inlet at its lower end which is closed while the pipe is being lowered."

A. No. In the case of Edwards the valved inlet is not closed while the packer is being lowered.

Q. Let's take Franklin now. Is there a valved inlet which is closed while the pipe is being lowered?

A. Yes.

Q. "setting the packer above the formation to seal off the drilling fluid from the formation." That is done in Cox and Edwards, isn't it?

A. Yes. Cox and Edwards set a packer to seal off. [fol. 708] Q. "opening the valved inlet after the packer is set to permit cognate fluid from the formation to enter the pipe." In the case of Edwards, when that valve is open, whatever fluid is below enters the valved inlet, does it not?

A. Yes; it enters a valved inlet if you want to call that sleeve a valve. But that sleeve can't be closed and I wouldn't term it a valve.

Q. You wouldn't call the device shown in the Franklin patent, those two discs, a valve?

Mr. L. S. Lyon: You were asking about Edwards.

By Mr. Boyken:

Q. I beg your pardon. Let's confine ourselves to Edwards.

A. No. Edwards doesn't call that a valve.

The Court: Are you referring to 7?

A. Yes, your Honor.

By Mr. Boyken:

Q. Do you say that Edwards does not call that member 7 a valve?

A. No.

Q. What about Cox?

A. Cox shows a check valve 15 that will permit fluid to flow up through it.

Q. And in the case of Franklin there is also a valve shown, is there?

A. Yes.

Q. Continuing with that claim, "closing the valved inlet against the entrance of fluid from the well by movement of the pipe." Do you find that in Franklin, that is, that the valve is closed by the movement of the pipe?

A. Yes; in co-operation with the pressure of gas to seat the valve disc D up against C.

Q. Do you also find that element in Edwards?

A. No.

[fol. 709] Q. Doesn't the upward movement of the pipe, if we call it the pipe 8, close the valved inlet against the entrance of fluid from the well?

A. No.

Q. You don't think so?

A. No.

Q. The last element of that claim is, "raising the pipe so closed to remove an entrapped sample and the packer from the well." In the case of Cox is not the pipe raised to remove an entrapped sample and the packer from the well?

Mr. L. S. Lyon: I object to that as not definite, your Honor. The claim says "the pipe so closed." Now, what does this question refer to? Is it any pipe or the pipe that has been closed?

The Court: Let the witness answer.

A. Yes. But the valve is not closed.

By Mr. Boyken:

Q. If there was a sample entrapped in the use of the Franklin device, when the pipe on the Franklin device is raised with the valve closed that entrapped sample would be brought to the top of the well, would it not?

A. No. I think the pressure of the sample on the inside would force disc D down and would pass out and into the upper part of the well.

Q. You are assuming a leaky valve but I am assuming now for the purposes of my question the valve closed so it would not leak. Then would it respond to that element?

A. Yes; making the assumption it wouldn't leak.

Q. You have answered my question. Thank you. That is all.

[fol. 710] Redirect examination.

By Mr. L. S. Lyon:

Q. Mr. Halliburton, referring now to claim 9, in interrogating you regarding whether or not the elements of this claim apply to the prior art counsel avoided asking you whether there is any packer on the pipe that is lowered into the well with the valve in the Franklin device. Is there any?

A. No.

Q. Will you point out in the Franklin patent each statement referring to the lowering or the raising of the valve in the Franklin patent into the well, and show to the court whether or not any packer is included on the equipment that is lowered into or removed from the well with the valve?

A. The Franklin patent doesn't state that the packer is lowered into the well with the valve. It would seem from reading the patent that the packer is already in the well.

Q. Is that true of each case throughout the patent where reference is made to the lowering of the valve into the well or the raising of the valve out of the well?

A. Yes.

Q. In each case the statement is that the device is lowered with the tubing or raised with the tubing, is that correct?

A. Yes. And it doesn't state anywhere that the packer is on the tubing.

Q. As one skilled in the art, if you were given the directions of the Franklin patent to follow, and particularly were told to lower this or install this Franklin valve within the well but preferably at a point above the packer, as stated [fol. 711] at line 17 of page 1, where would you consider the packer to be?

A. Well, I would ask where the packer was. I would consider it on the casing.

Q. And you would ask at what level it was?

A. Yes.

Q. It is clear to you, is it, that the packer is not on the tubing with the valve to be lowered in the well but is already in the well, is that correct?

Mr. Boyken: I object to that unless the patent says so. I was confined to the patent.

Mr. L. S. Lyon: I asked him if it was clear to him from the patent.

The Court: I think that question is objectionable on the ground it is leading. But I am considerably at sea with respect to this packer in the Franklin patent. It merely mentions a packer. There is no statement as to what it is really for.

Mr. L. S. Lyon: None whatever.

The Court: Nor where it is to be placed except above or below the valve.

Mr. L. S. Lyon: That the valve in the well is to be above the packer.

The Court: I think we have discussed this Franklin patent at considerable length both last night and this morning and, unless there is something you want to specifically call attention to, and you may do that from where you stand, we will pass to something else.

Mr. L. S. Lyon: I was only interrogating the witness because I formed the opinion that your Honor thought he had admitted in answer to Mr. Boyken's questions that there was a packer on this tube in the Franklin device. Mr. [fol. 712] Boyken carefully avoided asking him that and I just wanted to clear that up in your Honor's mind.

The Court: Yes.

By Mr. L. S. Lyon:

Q. And also, of course, there is no statement, or is there a statement, in the Franklin patent corresponding to the statement in claim 8 of the patent in suit, in the last line; "raising the pipe so closed to remove an entrapped sample and the packer from the well"?

A. No; there is no such statement.

Q. Is there any statement or any disclosure in the Franklin patent at all of pulling out the packer when you pull out the tube with the valve on it?

A. No.

Q. What does the patent say in each case as to what comes out when you pull out that tube?

A. The patent states that the valve is closed so there will be no flow up through the tube; in other words, that you won't bring out anything in it. Any flowing oil that came in would flow on out. And, if you closed the valve by turning the device, gas would keep the disc D seated so nothing could get in.

Q. You pointed out in connection with your patent application for the stop cock and gear device a provision in there for an extra pipe 41 and explained what that was for. Was that an essential part of that device?

A. No.

Q. Where such an extra pipe was to be used was it intended to go to the top of the well?

Mr. Boyken: We object to that—

A. No. We never have used that.

Mr. Boyken: Just a moment. I object to it on the ground it is leading—

[fol. 713] The Court: Yes; it is objectionable on that ground.

Mr. L. S. Lyon: He answered no and I don't know how it could be leading.

The Court: He is your witness. He has already testified about this.

By Mr. L. S. Lyon:

Q. In the actual five thousand or more tests that have been made with this stop cock and gear device has that extra pipé 41 ever been used?

A. No.

Mr. L. S. Lyon: I think that is all, your Honor.

The Court: All right.

Mr. L. S. Lyon: I have one question here. Perhaps we can call Mr. Simmons on it. There is one point. At page 955 of the transcript of Mr. Simmons' testimony, where he was testifying about how much money he received for his patent, he was asked if the \$5,000 was in addition to the \$2500 he received, and the answer at line 9 is "Yes, sir," and Mr. Simmons would like to have that corrected to "No, sir." It makes no difference in this case, but he wants it to be correct.

The Court: Very well.

Mr. Boyken: We will stipulate to that, your Honor.

Mr. L. S. Lyon: The plaintiff rests, your Honor.

The Court: Do both parties rest?

Mr. Boyken: Yes, both parties rest.

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[fol. 714] IN UNITED STATES DISTRICT COURT

STIPULATION AS TO NARRATIVE STATEMENT OF EVIDENCE

It is Hereby Stipulated and Agreed, by and between the parties hereto, through their respective attorneys, that the foregoing document consisting of pages 1 to 578 inclusive is hereby agreed upon as the narrative statement of testimony to be incorporated in the transcript of record on appeal in the above entitled cause.

Dated this 3rd day of March, 1937.

Lyon & Lyon, Leonard S. Lyon, Henry S. Richmond,  
Attorneys for Plaintiffs-Appellants. Hill, Morgan & Bledsoe, by Kenneth Wright, A. W. Boyken,  
Attorneys for Defendants-Appellees.

[fol. 715] IN UNITED STATES DISTRICT COURT

ORDER APPROVING NARRATIVE STATEMENT OF EVIDENCE

The foregoing condensed statement of evidence, together with the exhibits referred to and incorporated in the book of exhibits and set forth therein as a part hereof is Hereby Allowed and Approved and the same is Ordered Filed as the condensed statement of evidence to be included in the record on appeal in the above entitled cause as provided for in Equity Rule 75.

Those portions of the condensed statement, exclusive of the testimony of expert witnesses, which is set forth therein in question and answer form, has been requested by the respective parties, and it is Ordered that the same be so printed in question and answer form.

Dated this 4th day of March, 1937.

Geo. Gosgrave, U. S. District Judge.

[Endorsed]: Due service and receipt of a copy of the within "Narrative Statement of testimony" acknowledged this 3rd day of February, 1937. W. A. Boyken, Hill Morgan & Bledsoe attorneys for defendants. Lodged Feb. 3, 1937. R. S. Zimmerman, Clerk, by Edmund L. Smith, Deputy Clerk.

[File endorsement omitted.]

[fol. 716] IN UNITED STATES DISTRICT COURT

[Title omitted]

PETITION FOR APPEAL—Filed January 22, 1937

To the Honorable Judge of Said Court:

The above named Plaintiffs, Erle P. Halliburton and Halliburton Oil Well Cementing Company, a corporation, feeling aggrieved by the Decree entered in the above entitled cause on the 23rd day of October, 1936, do Hereby Appeal from said Decree to the United States Circuit Court of Appeals for the Ninth Circuit for the reasons set forth in the assignments of error filed herewith and Pray that their appeal be allowed and that citation be issued as pro-

[fol. 717] vided by law, and that a transcript of the record, proceedings and documents upon which said Decree was based, duly authenticated, be sent to the United States Circuit Court of Appeals for the Ninth Circuit under the rules of such Court in such case made and provided.

And Your Petitioners Further Pray that the proper Order relating to the security to be required of them be made, all of which is respectfully submitted.

Erle P. Halliburton, Halliburton Oil Well Cementing Company, by Henry S. Richmond, Solicitors for Plaintiffs. Leonard S. Lyon, Richard F. Lyon, Henry S. Richmond, Solicitors and of Counsel for Plaintiffs.

[File endorsement omitted.]

[fol. 718] IN UNITED STATES DISTRICT COURT

ASSIGNMENT OF ERRORS—Filed January 22, 1937

Now Come the above-named plaintiffs, Erle P. Halliburton and Halliburton Oil Well Cementing Company, a corporation, and file the following assignment of errors, upon which they will rely upon the prosecution of the appeal in the above-entitled cause from the Final Decree entered and recorded on the 23rd day of October, 1936, by this Court dismissing plaintiffs' Bill of Complaint:

# I

The Court erred in holding claims 8 to 19, inclusive, of the patent in suit invalid.

# II

The Court erred in not holding claims 8 to 19, inclusive, of the patent in suit valid.

# III

The Court erred in holding that neither of the defendants has infringed the patent in suit.

# IV

The Court erred in not holding that each of the defendants has infringed claims 8 to 19, inclusive, of the patent in suit.

## V

The Court erred in dismissing the bill of complaint and awarding costs of the suit to the defendants.

[fol. 719]

## VI

The Court erred in denying plaintiffs the relief sought by their bill of complaint, and in not awarding costs to plaintiffs.

## VII

The Court erred in holding "That there was no actual commercial use of the device disclosed and claimed in the Simmons patent in suit. Such device was impractical and the inventor himself, within a month after the patent was taken over by the present owners, was employed to devise improvements in the valve structure of such device, due to the difficulty in operating it at increased depths."

## VIII

The Court erred in not finding that the Letters Patent in suit went into immediate commercial use and established a new method and apparatus for testing formations of wells, which method and apparatus has become the standard method and apparatus employed in testing formations encountered in drilling oil wells throughout the oil producing fields of the United States, and that said invention has been and is of great benefit and has saved the oil industry millions of dollars.

## IX

The Court erred in holding "That Franklin Patent No. 263,330, dated August 29, 1882, anticipates both the method and apparatus disclosed and claimed in the patent here in suit."

## X

The Court erred in holding "That by using the device disclosed in said Franklin patent, a sample may be taken [fol. 720] out of the well uncontaminated by the contents of the hole above."

## XI

The Court erred in not holding that the device of the Franklin patent was intended to prevent fluid from the well being carried out of the well upon the removal of the

device therefrom, and that in fact no sample could be taken out of the well by the Franklin device.

## XII

The Court erred in holding "That the use of a packer, substantially as the same exists today, is necessarily implied from the language of such Franklin patent. This is also apparent from the contemporary literature on the subject descriptive of the state of the art. Without the use of a packer substantially as used today the Franklin device could not perform the functions attributed to it."

## XIII

The Court erred in not holding that the packer referred to in the Franklin patent was a packer on the well casing and that such packer was neither disclosed nor intended by Franklin to be used on the pipe which contained the valve; and that the use of a packer upon the pipe containing the valve was not necessary to the operation of the Franklin device.

## XIV

The Court erred in holding "That the device disclosed in said Franklin patent very plainly can be used as a tester: for by its use the contents of the producing stratum, sealed off from the remainder of the well, unimpeded in its entry into the rat hole by pressure of the rotary mud, can be brought undiluted to the surface by a mechanism almost [fol. 721] duplicating that shown in the patent in suit."

## XV

The Court erred in not holding that the device disclosed in said Franklin patent was intended for use in a well where there was no drilling fluid, and that it could not be used in a well containing drilling fluid as a tester; that it would require the addition of a packer not intended by Franklin for such device to be operated in a well-hole containing drilling fluid; that even by the addition of such packer the device disclosed in the Franklin patent could not remove an entrapped sample from the well-hole.

## XVI

The Court erred in holding "That a device made in accordance with the teachings of said Franklin patent actually

has recently been used for the purpose of successfully making a water shut-off test and the same device would also successfully make a production test."

## XVII

The Court erred in not holding that in order for the device of the Franklin patent to be used either for the purpose of a water shut-off test or a production test required the addition to the Franklin device of a packer not intended by Franklin and a reconstruction of the valve structure in order to permit the same to entrap a sample of fluid from the formation.

## XVIII

The Court erred in holding "That Edwards Patent No. 1,514,585, dated November 4, 1924, substantially discloses the method and device disclosed and claimed in the patent in suit."

[fol. 722]

## XIX

The Court erred in not holding that the Edwards patent discloses an apparatus which requires the use of two tubes or pipes, while the patent in suit employs but a single pipe; that the Edwards patent describes an apparatus and method for testing wells by which a sample from the well is to flow through the pipe to the surface of the well while the patent in suit discloses a method and apparatus whereby a sample from the well may be entrapped in the pipe and raised to the surface with the apparatus so that the sample can be examined; the Edwards patent does not disclose a valve positively controlled by movement of the pipe or a valve having one part attached to the packer and another part to the pipe, as described and claimed in the Letters Patent in suit; that the apparatus and process of the Edwards patent was never actually employed and could not be successfully used for testing of oil wells:

## XX

The Court erred in holding "That Cox Patent No. 1,347,534, dated July 27, 1920, also substantially discloses the method and device disclosed and claimed in the patent in suit."

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## XXI

The Court erred in not finding that the Cox patent No. 1,347,534 requires the use of two pipes or tubes, while the patent in suit employs but a single pipe; that the apparatus and process of the Cox patent discloses no valve, one part of which is attached to the packer and the other part to the pipe, or a valve positively controlled by movement of the pipe as described and claimed in the Letters Patent in suit; that the Cox patent does not disclose an apparatus and process adapted for removing an uncontaminated sample of fluid from the formation upon removal of the [fol. 723] apparatus, as described and claimed in the Letters Patent in suit.

## XXII

The Court erred in holding "That the object of said Edwards and Cox patents was to ascertain what the stratum that was being drilled was producing, such object being precisely that of the patent in suit."

## XXIII

The Court erred in not holding that the object of the method and apparatus of the patent in suit is to enable the removal of an uncontaminated entrapped sample of fluid from the formation to be tested, and that neither the Edwards nor Cox patents were capable of accomplishing this object.

## XXIV.

The Court erred in holding "That the nature of the testing devices and methods of use disclosed in said Edwards and Cox patents, except as modified by the necessity of overcoming later difficulties, are the same as those disclosed and claimed in the patent in suit."

## XXV

The Court erred in not finding that neither the Edwards nor Cox device or method ever went into actual use in the oil well industry; that each device or method required the use of two strings of pipe and no practical method or device for testing of wells can be used that employs more than a single string of pipe; that neither the device nor method disclosed by the Edwards or Cox patents is adapted to remove an uncontaminated entrapped sample of fluid from

a well and is not of value in the testing of wells; that the deficiencies of the Edwards and Cox patents are inherent in the disclosures of said patents and the success of the apparatus [fol. 724] and process of the patent in suit is due to the invention and discovery first shown in that patent of the importance of the use of a single string of pipe in connection with a valve so designed as to be positively operated by the movement of that single string of pipe which was responsible for the revolution in the methods of testing formations; and that there were no changes in the conditions of drilling wells between the dates of the Edwards and Cox patents and the date of the Simmons invention which explained the success of the Simmons method and apparatus as compared with the failure of the Edwards and Cox methods and apparatus.

Wherefore, appellants pray that said Order be reversed and that said District Court of the Northern Division for the Southern District of California be ordered to enter its Decree holding the Simmons patent in suit, No. 1,930,987, valid and infringed as to Claims 8 to 19, inclusive, granting a perpetual injunction restraining defendants and those in active concert with them from infringing any of said claims of said patent here in suit and ordering an accounting for profits and damages herein, and for costs of suit herein.

Erle P. Halliburton, Halliburton Oil Well Cementing Company, by Henry S. Richmond, Solicitor for Plaintiffs, Lyon & Lyon, Leonard S. Lyon, Richard F. Lyon, Henry S. Richmond, Solicitors and of Counsel for Plaintiffs.

[File endorsement omitted.]

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[fol. 725] IN UNITED STATES DISTRICT COURT

ORDER ALLOWING APPEAL WITH SUPERSEDEAS—Filed January 22, 1937

Considering the Petition for Appeal in the above entitled cause this day presented.

It is Ordered that an appeal be allowed to Erle P. Halliburton and Halliburton Oil Well Cementing Company, Petitioners therein and plaintiffs in this suit from the Final De-

decree rendered against said defendants in the above entitled and numbered cause, and that said appeal shall be returnable to the United States Circuit Court of Appeals for the Ninth Circuit, and that upon the execution of a bond in the penalty of One Thousand Dollars (\$1000.00) said appeal shall operate as a supersedeas of said Decree and shall suspend until the Final Decree herein, the effect of the award of costs to defendant; and that a transcript of the record, testimony, exhibits, stipulations and all proceedings be filed in the United States Circuit Court of Appeals for the Ninth Circuit according to law as prayed for.

Dated at Los Angeles, California, January 22, 1937.

Geo. Cosgrave, U. S. District Judge.

[File endorsement omitted.]

[fol. 726] IN UNITED STATES DISTRICT COURT

STIPULATION CONCERNING PHYSICAL EXHIBITS—Filed March 4, 1937

It is Hereby Stipulated and Agreed by and between the parties hereto, through their respective attorneys, that each of the parties hereto will transport and have present at the court room of the United States Circuit Court of Appeals for the Ninth Circuit at San Francisco on the date of the argument of the appeal herein, all physical exhibits introduced by them at the trial of this cause in the District Court; that said physical exhibits may be used by either or both parties at the argument.

Dated at Los Angeles, California, this 3rd day of March, 1937.

Lyon & Lyon, Leonard S. Lyon, Henry S. Richmond,  
Solicitors and Counsel for Plaintiffs. Hill, Morgan  
& Bledsoe, by Kenneth K. Wright, A. W. Boyken,  
Solicitors and Counsel for Defendants.

Approved, March 4, 1937. Geo. Cosgrave, U. S. District Judge.

[File endorsement omitted.]

[fol. 727] IN UNITED STATES DISTRICT COURT

STIPULATION RE PRINTING AND FILING OF BOOK OF EXHIBITS  
ON APPEAL HERETOFORE TAKEN TO UNITED STATES CIRCUIT  
COURT OF APPEALS FOR THE NINTH CIRCUIT—Filed March  
10, 1937

It is Hereby Stipulated and Agreed by and between the parties to the above entitled cause, by their counsel, that the paper exhibits set forth and included in Paragraph XIV of plaintiffs' amended praecipe, shall not be printed in the Transcript of Record on Appeal herein taken, but shall be separately printed and included in a Book of Exhibits pursuant to the practice of said Appellate Court; five (5) copies to be printed for said Appellate Court and filed with the Clerk thereof at the time of filing the Transcript and docketing the cause in said Appellate Court, two (2) copies thereof to be furnished to counsel for defendants and such extra copies as plaintiffs may desire to be furnished their counsel, the cost of preparing and printing and certifying said Book of Exhibits and the contents thereof to be borne initially by plaintiffs.

The paper exhibits not to be included in the Book of Exhibits shall be transmitted by the Clerk of this Court to the Clerk of said Appellate Court as physical exhibits.

[fol. 728] Dated at Los Angeles, California, this 3rd day of March, 1937.

Lyon & Lyon, Leonard S. Lyon, Henry S. Richmond,  
Solicitors and Counsel for Plaintiffs. Hill, Morgan  
& Bledsoe, by Kenneth K. Wright, A. W. Boyken,  
Solicitors and Counsel for Defendants.

Approved, March 4, 1937. Geo. Cosgrave, U. S. District Judge.

Approved, March 5, 1937. Curtis D. Wilbur, Judge of the United States Circuit Court of Appeals for the Ninth Circuit.

[File endorsement omitted.]

[fols. 729-731] Supersedeas bond on appeal for \$1,000.00, approved and filed January 22, 1937, omitted in printing.

[fol. 732] IN UNITED STATES DISTRICT COURT

PLAINTIFFS' AMENDED PRAECIPE FOR TRANSCRIPT OF RECORD  
ON APPEAL—Filed March 4, 1936

To the Clerk of Said Court:

SIR:

Please prepare and print transcript of the record on appeal in the above entitled cause to the United States Circuit Court of Appeals for the Ninth Circuit in Erle P. Halliburton Oil Well Cementing Co.'s appeal from the Final Decree entered herein on the 23rd day of October, 1936, such Transcript of Record on appeal to be made up of the following documents:—

- I. Bill of Complaint filed November 3, 1933.
- II. Defendants' Answer filed December 14, 1933.
- III. Defendants' Amendment to the Answer filed October 14, 1935.
- IV. Memorandum Opinion of Judge Cosgrave dated July 28, 1936.
- V. Findings of Fact and Conclusions of Law filed October 23, 1936.
- VI. Final Decree.
- VII. Petition for Appeal.
- VIII. Order allowing Appeal.
- IX. Assignments of Error.
- X. Bond on Appeal.
- XI. Citation.
- XII. Narrative Statement of Evidence filed herein this day of March, 1937.
- [fol. 733] XIII. Notice of lodgment of Narrative Statement of Evidence.
- XIV. Nine (9) copies of Book of Exhibits to be made up of the following exhibits:

Plaintiffs' Exhibits

- (1) Plaintiffs' Exhibit No. 1, copy of Simmons patent in suit, No. 1,930,987;
- (2) Plaintiffs' Exhibit No. 2, certified copy of File Wrapper and contents of the Simmons Patent in suit, No. 1,930,987;

(3) Plaintiffs' Exhibit No. 4-A, certified copies of papers Nos. 1 and 39 in the Matter of the Interference of Williams, et al. vs. Simmons No. 55,940;

(4) Plaintiffs' Exhibit No. 4-B, certified copies of papers Nos. 1 and 40 in the Matter of the Interference of Williams, et al. vs. Simmons No. 55,941;

(5) Plaintiffs' Exhibit No. 3, certified copies of papers Nos. 40, 114, 119 and pages 1, 2 and 4 of the index of the Edwards vs. Simmons Interference No. 59,515;

(6) Plaintiffs' Exhibit No. 17, letter of District Judge Bryant of the Eastern District of Texas;

(7) Plaintiffs' Exhibit No. 6, certified copy of Interlocutory Decree in Texas case;

(8) Plaintiffs' Exhibit No. 11, print of drawing marked No. 60 illustrating setting of tester at bottom of well;

[fol. 734] (9) Plaintiffs' Exhibit No. 15, drawing of "J" type tool;

(10) Plaintiffs' Exhibit No. 18, receipt of Eby Engineering Company;

(11) Plaintiffs' Exhibit 19, diagram in explanation of Franklin patent;

(12) Plaintiffs' Exhibit 20, reprint from Oil Weekly of October 2, 1925;

(13) Plaintiffs' Exhibit No. 16-B, drawing attached to defendants' answers to plaintiffs' interrogatories;

(14) Plaintiffs' Exhibit No. 16-C, drawing attached to defendants' answers to plaintiffs' interrogatories;

(15) Plaintiffs' Exhibit No. 16-D, drawing attached to defendants' answers to plaintiffs' interrogatories.

#### Defendants' Exhibits

(16) Defendants' Exhibit A., certified copy of abandoned application of Erle P. Halliburton filed December 28, 1926. Ser. No. 157,573 entitled "Improvement in Well Testing Device";

(17) Defendants' Exhibit C., blueprint of parts of "J" type tool;

(18) Defendants' Exhibit H-1, copy United States Letters Patent No. 46,124, Lyons, issued January 31, 1865;

[fol. 735] (19) Defendants' Exhibit H-2, copy United States Letters Patent No. 56,234, Latham, issued July 10, 1866;

(20) Defendants' Exhibit H-3, copy United States Letters Patent No. 58,837, Kewley, issued October 16, 1866;

(21) Defendants' Exhibit H-4, copy United States Letters Patent No. 68,350, Burr & Wakelee, issued September 3, 1867;

(22) Defendants' Exhibit H-5, copy United States Letters Patent No. 73,577, Carll, issued January 21, 1868;

(23) Defendants' Exhibit H-6, copy United States Letters Patent No. 182,098, Birge, issued September 12, 1876;

(24) Defendants' Exhibit H-7, copy United States Letters Patent No. 208,610, Koch, issued October 1, 1878;

(25) Defendants' Exhibit H-8, copy United States Letters Patent No. 249,228, Dower, issued November 8, 1881;

(26) Defendants' Exhibit H-9, copy United States Letters Patent No. 263,330, Franklin, issued August 29, 1882;

(27) Defendants' Exhibits H-10, copy United States Letters Patent No. 582,828. McGregor, issued May 18, 1897;

(28) Defendants' Exhibit H-11, copy United States Letters Patent No. 785,933, Bloom, issued March 28, 1905;

[fol. 736] (29) Defendants' Exhibit H-12, copy United States Letters Patent No. 1,000,583, Cooper, issued August 15, 1911;

(30) Defendants' Exhibit H-13, copy United States Letters Patent No. 1,347,534, Cox, issued July 27, 1920;

(31) Defendants' Exhibit H-14, copy United States Letters Patent No. 1,474,630, Halliday, issued November 20, 1923;

(32) Defendants' Exhibit H-15, copy United States Letters Patent No. 1,510,669, Halliday, issued October 7, 1924;

(33) Defendants' Exhibit H-16, copy United States Letters Patent No. 1,514,585, Edwards, issued November 4, 1924;

(34) Defendants' Exhibit H-17, copy United States Letters Patent No. 1,522,197, Maeready, issued January 6, 1925;

(35) Defendants' Exhibit I-1, reports of Carll;

(36) Defendants' Exhibit I-2, article by Peckham;

(37) Defendants' Exhibit I-3, article by Chamberlain;

(38) Defendants' Exhibit R, Patent No. 1,901,813, issued March 14, 1933, to M. O. Johnston, assignor of one-third to Gilson M. Jones and one-third to Francis C. Van Deinse;

(39) Defendants' Exhibit S, Patent No. 1,842,270 issued

to M. O. Johnston, assignor to Johnston Formation Testing Corporation, Ltd.;

[fol. 737] (40) Defendants' Exhibit U, Patent No. 1,709,940 to Edgar Clinton Johnston, issued April 23, 1929;

(41) Defendants' Exhibit V, Patent No. 1,790,424, to Edgar C. Johnston, issued January 27, 1931;

(42) Defendants' Exhibit Y, Patent No. 1,715,504 dated June 4, 1929, to James L. Johnston, Edgar C. Johnston and Blaine Johnston.

XV. Stipulation providing for printing Book of Exhibits.

XVI. This amended praecipe.

XVII. Stipulation providing for the transmittal of original exhibits to Circuit Court of Appeals.

XVIII. Stipulation extending time within which to prepare record and docket appeal.

Dated this 3rd day of March, 1937.

Lyon & Lyon, Leonard S. Lyon, Henry S. Richmond,  
Attorneys for Plaintiffs-Appellants.

[Endorsed]: Due service and receipt of a copy of the within Amended Praecipe is hereby admitted this 3rd day of March, 1937. A. W. Boyken, Hill, Morgan & Bledsoe, atty. for defendants.

[fols. 738-742] Clerk's certificate to foregoing transcript omitted in printing.

[fol. 743] IN UNITED STATES CIRCUIT COURT OF APPEALS FOR  
THE NINTH CIRCUIT

Before Wilbur, Haney and Stephens, Circuit Judges

ORDER OF SUBMISSION—April 8, 1938

Order appeal in above cause argued by Mr. Leonard S. Lyon, counsel for appellants, and by Mr. A. W. Boyken, counsel for appellees, and submitted to the court for consideration and decision.

IN UNITED STATES CIRCUIT COURT OF APPEALS FOR THE NINTH  
CIRCUIT

ORDER DIRECTING FILING OF OPINION AND FILING AND RE-  
CORDING OF DECREE—July 11, 1938

By direction of the Court, ordered that the typewritten opinion this day rendered by this Court in above cause be forthwith filed by the clerk, and that a decree be filed in [fol. 744] above cause and recorded in the minutes of this Court in accordance with the opinion rendered.

IN UNITED STATES CIRCUIT COURT OF APPEALS

OPINION—Filed July 11, 1938

Before Wilbur, Haney and Stephens, Circuit Judges

WILBUR, Circuit Judge:

This is an appeal from a final decree of the District Court holding patent No. 1,930,987 "and particularly claims 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18 and 19 invalid for want of invention", and not infringed by appellees.

The patent in suit was issued to John T. Simmons on October 17, 1933 on an application filed February 10, 1926 and is for a method and apparatus for testing the productivity of formations encountered in drilling an oil well. Claims 8 and 18 are method claims and claims 9, 10, 11, 12, 13, 14, 15, 16, 17, and 19 are apparatus claims. The apparatus includes a pipe or casing, the end of which is perforated, which is lowered into an uncased extension of the well bore of reduced diameter (called a "rat hole") for testing the formation for gas or liquid. Near the lower end of the pipe, but above a packer, a valve is provided which [fol. 745] can be manipulated from the surface of the well to either close or pen the interior of the pipe to the fluids of the formation which enter through the strainer from the "rat hole". When the perforated end of the pipe, or "strainer", is placed in the rat hole the valve in the pipe is opened to the atmospheric pressure while the pressure of the mud-laden fluids in the well is sealed off from the rat hole by a "frusto-conical shaped" packer that is adapted to wedge in the upper end of the "rat hole". (Fig. 1)

(Here follows one photolithograph, side folio 746)

The patent drawings are shown below in Fig. 1.

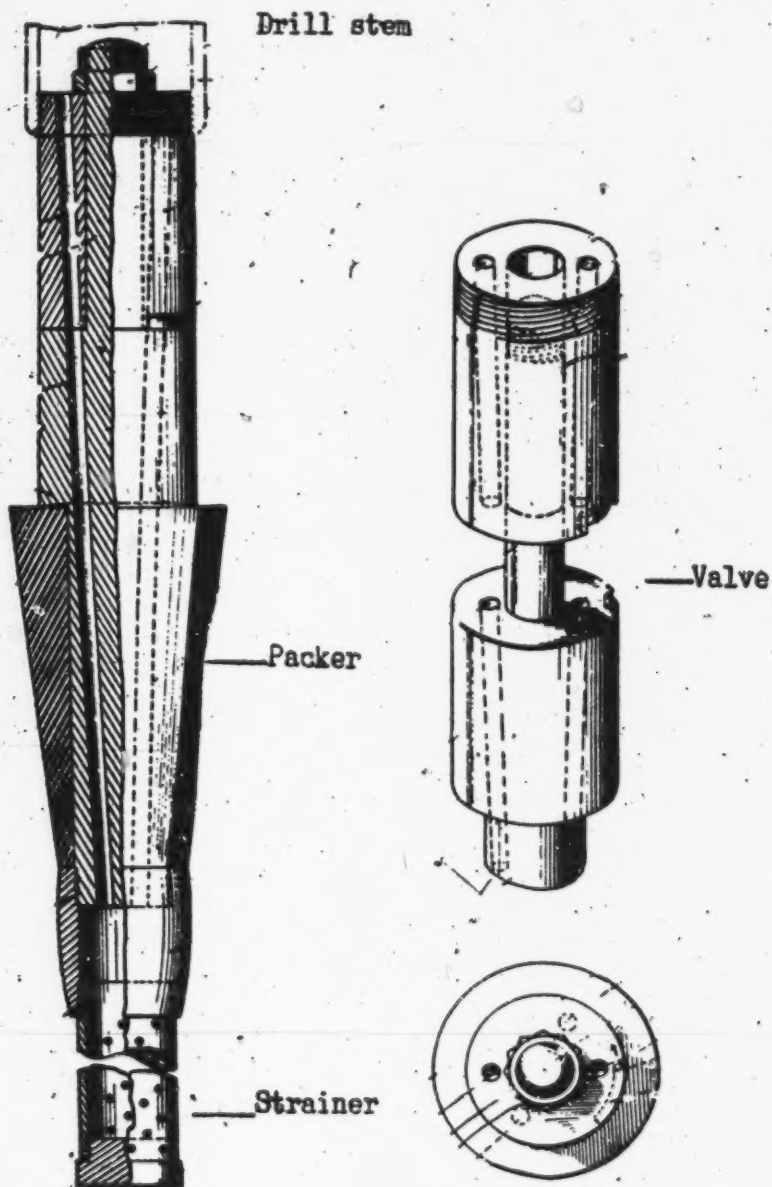


Fig. 1.



[fol. 747] The appellants claim that their patent is basic and revolutionary for both process and apparatus. The problem to be solved was that of testing the formation without withdrawing the drilling fluid and without maintaining the circulation thereof. The drilling fluid in rotary drilling is used to keep its hydrostatic pressure against the walls of the drill hole behind and below the unset casing so as to prevent the formation from caving in or being blown in by gas or being forced in by gas, water or oil pressure. The drilling fluid has a specific gravity in excess of water (1.2 or over) and thus will balance the pressure of liquid water or oil in the formation. It also tends to plaster mud against the exposed face of the formation, and to penetrate its recesses and thus to block off pressure. Prior to the patented method in suit tests were made by cementing a casing in the well and emptying the well of the drilling fluids by bailing and swabbing. The operator could then determine whether a productive formation was reached by observing whether or not gas or oil flowed over the top of the well or by pumping the well if the flow was not sufficient to reach the top. This method of testing was both expensive and detrimental to the well for if the test failed to show productive quantities of oil had been reached further drilling operations had to be carried on at reduced diameter.

The idea of the industry was that if the pressure of the drilling fluid was removed by pumping or bailing cave-ins against the casing might prevent further deepening of the [fol. 748] well with that diameter of the casing, and if the drill stem and drill were in the well after the drilling fluid was removed cave-ins against the drill stem and drill below the casing might prevent their withdrawal. When the scheme was considered of testing a well without the removal of, or the circulation of, the drilling fluid, the idea was rejected because the plan called for a packer at the top of the rat hole and it was believed that the cave-ins above the packer would prevent the withdrawal of the drill stem. Earlier inventors had approached the problem with this thought in view and had provided two strings of pipe, an outer string and an inner string. (Patent No. 1,347,534 granted E. H. Cox July 27, 1920, Patent No. 1,514,585 granted C. R. Edwards, November 4, 1924). The outer string of pipe was used to provide for circulation of the fluids in the well, to prevent crumbling of the walls of the well down over the packer. The evidence shows that the

use of two strings of pipe as disclosed by these patents was not practical. These patents do not disclose the use of the patented process in suit where only a single string of pipe is used and do not anticipate the Simmons patent. By the use of the process in suit it was found that the use of a single string of pipe for taking an entrapped sample was successful and practical.

The prior art chiefly relied upon as anticipating the patent in suit is patent No. 263,330 granted to Benjamin Franklin August 29, 1882 for a device for controlling and [fol. 749] regulating the flow of oil wells, an analogous art. The device disclosed by this patent is a valve connected with a well tubing, or pipe, constructed to be placed in a well and operated manually to regulate the flow of the well. The patentee states that the device "can be connected with the tubing of the well, either within or without the well, but preferably within at a point above the packer. \* \* \*". The valve structure includes a disk with a half-circle opening in it which lies on a shoulder in the lower half of the valve. It is designed so that the opening in the disk registers with a corresponding opening in the upper part of the valve. The disk in the preferred form of construction pointed out by the patentee is set loosely between the two parts of the valve having pins connecting it with the lower part of the valve which prevent it from turning around but allow it to move vertically. The patent also teaches that the disk may be attached solid to the lower part of the valve and states that "it is better to be loose, as shown; but whether seated loosely and held by pins or lugs, or forming an actual part of the part B, it is in fact a part of the lower half of the valve."

Does the Franklin patent disclose the patented device in suit? Appellants contend that the device disclosed by the Franklin patent is incapable of taking an entrapped sample because it does not appear from the patent that a packer was located on the tubing to seal off the formation below the packer and because the Franklin valve would leak upon removal of the tubing from the well.

[fol. 750] Much of the argument as to the Franklin patent centers upon the question of whether or not the Franklin patent contemplates the use of a packer upon the tubing in which he sets his valve. That Franklin contemplated the existence and use of a packer is clearly stated in his patent. As we have pointed out, Franklin states that his valve de-

vice can be connected with the tubing in the well, either within or without the well, "but preferably at a point above the packer". The appellees claim that the packer referred to by Franklin is on the tubing, and that this was understood by those familiar with the art. In support of their contention they produced a government publication, "The Tenth Census of the United States", containing a report by S. F. Peckham "on the production, technology and uses of petroleum and its products". Therein is a diagram of a flowing oil well showing an oil well tube extending far below the bottom of the oil casing and into the oil sand with a packer on the tubing above the oil sand, closing off the upper part of the well so that the oil would be compelled to ascend through the tubing. As the packer was well known and in constant use, Franklin made no claim for it or about its use. Upon the theory that the Franklin device contemplated a packer below its valve, the appellees have constructed a device on the Franklin specifications plus the packer and have used the device successfully to make a water shut-off test in an oil well about 1600 feet in depth. [fol. 751] To meet the obvious conclusions that Franklin contemplated a packer to keep back the gas and to force the gas and oil up through the tubing of the Franklin device, the appellants contend that the packer referred to by Franklin was one at the bottom and outside of the well casing placed there to shut off the water from the formations above. Appellants' witness Halliburton claimed that Franklin contemplated a casing housed over at the top above the surface by a dome or cover thus making the entire casing a gas chamber in which to build up gas pressure. Halliburton's conception of the Franklin device is shown by the following drawing presented by him (Fig. 2).

(Here follows one photolithograph, side folio 752)

# PRIOR FRANKLIN PATENT 863,330

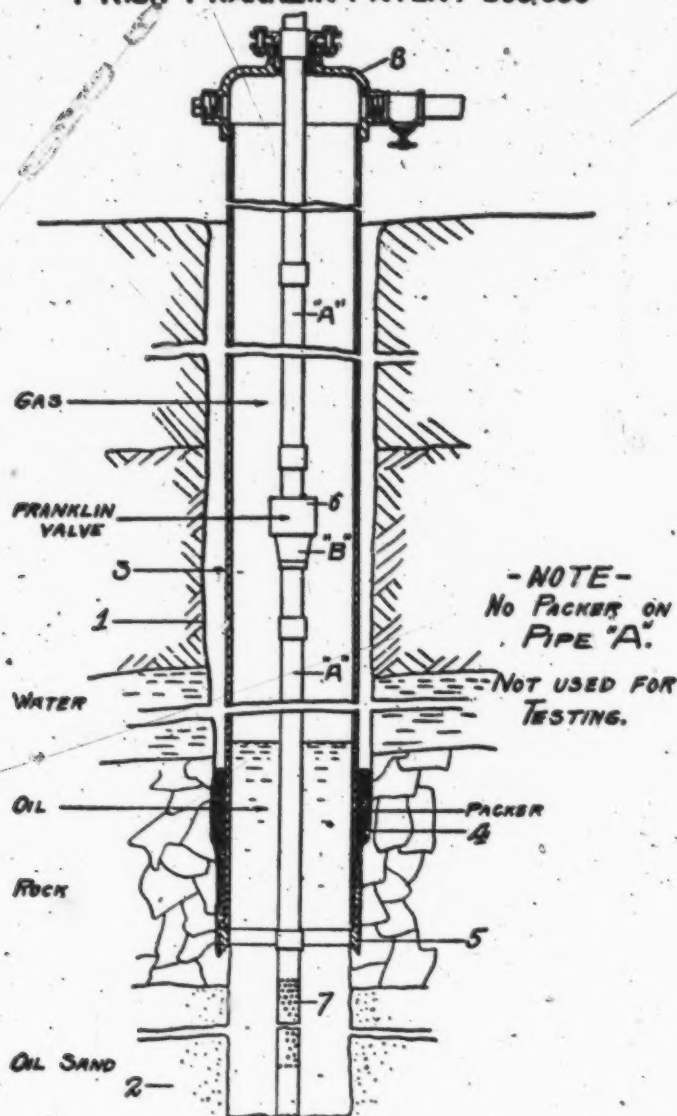


Fig. 2.



[fol. 753] While this is an ingenious attempt to explain the operation of the Franklin device without using a packer on the oil tube *below* \* the Franklin valve, it finds no support in the language of the patent. If Franklin had contemplated using his device without a packer as suggested by the appellants, then any sort of a shut-off valve in the tube protruding from the dome would have been sufficient for his purpose. His purpose in using a packer on the tube below the valve was to close the space between the tube and the casing, thus avoiding the possible loss of gas pressure which might otherwise result from the leakage of gas through the joints of the casing and of the tube if he had merely housed over the casing projecting above the surface of the ground and used no packer, as witness Halliburton claims he intended.

The appellant Halliburton, who qualified as an expert patent lawyer and mechanical engineer familiar with the oil industry, testified that if the Franklin device was equipped with a packer and used to test the formation in accordance with the appellant's patent, it would infringe the latter. As we hold that the Franklin device contemplated the use of a packer below the valve to close the upper part of the casing or well from the lower, this testimony is equivalent to saying that the Franklin device anticipated that of the appellants unless there is something involving patentable novelty in the use of the Franklin device for [fol. 754] testing a well instead of for augmenting and regulating the flow of a well. Appellants also claim, however, that the valve of the Franklin device will not retain an entrapped sample because one disk of the valve is designed to be held in place by the upward pressure of the gas in the well, and has a slight vertical motion, evidently designed to reduce friction and facilitate the rotation of the upper part of the valve. When the valve is closed the disk, unless sustained in position, will drop down and allow the contents of the tube to escape as soon as the weight of the entrapped sample equals or exceeds the upward pressure of the gas. To this proposition two answers are advanced. The first, that it does not involve invention to tighten what would otherwise be a leaky valve. This view was expressed by

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\* Italics are by the Court.

the trial court and following its decision, by the Circuit Court of Appeals for the Fifth Circuit, which held the process claims of the patent in suit to be void. *Johnston Formation Testing Corp. v. Halliburton*, 88 F. 2d. 970. A second answer is that Franklin in his patent, while showing a valve with a disk having vertical play in his drawings and specifications, expressly states that the lower disk may be secured to the lower part of the valve. It is clear that Franklin did not limit his invention, or its description to the vertically movable disk. Moreover, the Franklin device built tried and tested by the appellees recovered an entrapped sample.

It is clear that no invention would be involved in tightening what otherwise would be a leaky valve and more-[fol. 755] over the Franklin patent disclosed a valve operated by movement of the pipe that did not leak. We conclude that the apparatus claims of the patent in suit were anticipated by the patent to Franklin.

Although we hold that the Franklin device anticipates the combination claims of appellants' patent and could be used in carrying out the patented process, this holding does not negative invention as to the process claims in suit. The apparatus used in carrying out a process may be old and yet the process valid. (*Expanded Metal Co. v. Bradford*, 214 U. S. 366, 53 L. Ed. 1034, 1040; *Carnegie Steel Co. v. Cambria Iron Co.*, 185 U. S. 403.) Does the Franklin patent disclose the process in suit? Franklin directs that the pipe be lowered into the well and the valve operated by movement of the pipe to control the flow of oil. The patent also teaches that the tube can be kept empty by keeping the valve closed while it is being lowered and that the valve also should be closed prior to the removal of the tubing.

The Franklin device was to be used in a flowing oil well. Such a well, of course, contains no drilling fluid. Moreover, at the time of the Franklin patent, the rotary method of drilling was unknown. The purposes of the Franklin patent were two-fold: First, to provide a method of keeping the tubing of the well closed while it was being lowered into the well or removed therefrom, and second, to provide means of temporarily closing the tubing to allow the gas in the well to obtain sufficient head so that the well would [fol. 756] flow. There is no use disclosed of taking an entrapped sample from an unfinished well containing drill-

ing fluid. The device was evidently intended to be permanently attached to the tubing of the well. There is no suggestion of the last step of the patented process in suit, that is, the taking of an entrapped sample from an incomplete well containing drilling fluid.

As we have stated, Simmons faced the problem of providing a method of testing an oil well without removing the hydrostatic pressure necessary for supporting the formation in place. He met this problem by providing a method operating so quickly that the suspension of the circulation of drilling fluid was not substantially greater than that frequently necessary in drilling operations. Franklin neither considered nor solved this problem.

This discovery constituted invention for it disclosed what had not been thought possible in the art, that is, that such a device could be set in a well containing drilling fluid while there was no circulation thereof long enough to make a test. It substituted a much better process than had hitherto been in use. The patentee discovered that a well could be safely tested by the lowering of a single string of pipe equipped with a valve packer and strainer and that it was not necessary to set the casing permanently and bail out the drilling fluid, or, if a test were attempted without permanently setting the casing that it was not necessary to provide an extra string of pipe for circulation of the drilling fluid. See, *Pacific Contracting Co. v. Bingham*, 62 F. 281; *Tarr v. Folsom*, Fed. Cas. No. 13,756; *Lawther v. Hamilton*, 124 U. S. 1. In *Lawther v. Hamilton*, the patentee had discovered that in treating ole-ginous seeds for the purpose of extracting oil therefrom, more advantageous results were attainable by dispensing with the use of muller stones in crushing the seeds. The lower court had held that this discovery was not of a new series of acts or steps constituting a process but only of certain mechanical changes in carrying into effect well known steps of the process. In regard to this holding, the Supreme Court said:

"The view thus taken by the court below seems to us open to some criticism. If, as that court says, and we think rightly says, the omission of the muller stones is a real improvement in the process of obtaining the oil from the flaxseed, if it produces more oil and better oil cakes, and it is new, and was not used before, why is it not a patentable

discovery? And why is not such new method of obtaining the oil and making the oil cakes a process? There is no new machinery. The rollers are an old instrument, the mixing machinery is old, the hydraulic press is old; the only thing that is new is the mode of using and applying these old instrumentalities. And what is that but a new process? This process consists of a series of acts done to the flaxseed. It is a mode of treatment. The first part of the process is to crush the seeds between rollers. Perhaps, as this is the only breaking and crushing of the seed [fol. 758] which is done, the rollers are required to be stronger than before. But if so, it is no less a process."

Appellee further contends that the process claims are invalid because specifying apparatus to be used in the process and because, it is claimed, the process is the mere function of a machine. These contentions are without merit. A patent is not invalid because requiring specific apparatus in carrying it out. *Expanded Metal Co. v. Bradford*, 214 U. S. 366, 53 L. Ed. 1034; *Lawther v. Hamilton*, 124 U. S. 1, *supra*; *Owen v. Perkins Oil Well Cementing Co.*, 38 F. (2d) 30. The process in suit is not the function of a machine; it requires manual operation. We conclude that the process disclosed in claims 8 and 18 is valid.

### Infringement

We hold that the appellees infringed the process claims of the patent in suit. All the steps of the claims in suit are employed by the appellee although the main valve of the appellees' device (which corresponds to the valve in the patent in suit) is opened by vertical movement of the drill pipe while the patented device is opened by a horizontal rotation of the pipe. The fact that the device used by appellees contained auxiliary valves (trip valve to take care of the contingency of main valve opening while being lowered, the equalizing valve, a device to lessen the pull required to unseat the packer, a circulating valve used in an emergency when it is necessary to abandon the test) does not avoid infringement, as the primary process of appellee [fol. 759] is employed. They constitute improvements in the device used to practice the patented process.

We find that the Honolulu Oil Corporation participated jointly in infringement in using the process on the wells drilled by it. We hold that there was infringement of the

process by the Honolulu Oil Corporation as well as by appellee M. O. Johnston Oil Field Service Corporation.

Reversed and remanded for proceedings not inconsistent herewith.

[File endorsement omitted.]

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IN UNITED STATES CIRCUIT COURT OF APPEALS FOR THE NINTH  
CIRCUIT

No. 8653

ERLE P. HALLIBURTON et al., Appellants,

VS.

HONOLULU OIL CORPORATION et al., Appellees

DECREE—Filed July 11, 1938

Appeal from the District Court of the United States for the Southern District of California, Northern Division.

This Cause came on to be heard on the Transcript of the Record from the District Court of the United States for the Southern District of California, Northern Division, and was duly submitted:

[fol. 760] On Consideration Whereof, it is now here ordered, adjudged, and decreed by this Court, that the decree of the said District Court in this cause be, and hereby is, reversed with costs in favor of the appellants and against the appellees, and that this cause be, and hereby is remanded to the said District Court for further proceedings not inconsistent with the opinion of this court.

It is Further Ordered, Adjudged, and Decreed by this Court, that the appellants recover against the appellees for their costs herein expended, and have execution therefor.

[File endorsement omitted.]

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IN UNITED STATES CIRCUIT COURT OF APPEALS FOR THE NINTH  
CIRCUIT

ORDER DENYING PETITION FOR REHEARING—September 12,  
1938

Upon consideration thereof, and by direction of the Court, It Is Ordered that the petition of appellees, filed August

10, 1938, and within time allowed therefor by rule of court, for a rehearing of above cause, be, and hereby is denied.

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[fol. 761] IN UNITED STATES CIRCUIT COURT OF APPEALS

ORDER STAYING ISSUANCE OF MANDATE—Filed September 13, 1938

Upon application of A. W. Boyken, Esq., counsel for the appellees, and good cause therefor appearing, It Is Ordered that the issuance, under Rule 32, of the mandate of this Court in the above cause be, and hereby is stayed to and including October 17, 1938; and in the event the petition for a writ of certiorari to be made by the appellees herein be docketed in the Clerk's office of the Supreme Court of the United States on or before said date, then the mandate of this Court is to be stayed until after the said Supreme Court passes upon the said petition.

William Denman, United States Circuit Judge.

Dated: San Francisco, California, September 13, 1938.

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[fol. 762] Clerk's certificate to foregoing transcript omitted in printing.

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[fol. 763] IN UNITED STATES CIRCUIT COURT OF APPEALS FOR THE NINTH CIRCUIT

[Title omitted]

ORDER STAYING ISSUANCE OF MANDATE—Filed October 3, 1938

Upon application of Mr. A. W. Boyken, counsel for the appellees, and good cause therefor appearing, it is Ordered that the issuance, under Rule 32, of the mandate of this Court in the above cause be, and hereby is stayed to and including November 14, 1938; and in the event the petition for a writ of certiorari to be made by the appellees herein be docketed in the Clerk's office of the Supreme Court of the United States on or before said date, then the man-

date of this Court is to be stayed until after the said Supreme Court passes upon the said petition.

Francis A. Garrecht, United States Circuit Judge.

Dated, San Francisco, California, October 3, 1938.

[File endorsement omitted.]

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[fol. 764] SUPREME COURT OF THE UNITED STATES, OCTOBER  
TERM, 1938

No. 466

ORDER ALLOWING CERTIORARI—Filed December 19, 1938

The petition herein for a writ of certiorari to the United States Circuit Court of Appeals for the Ninth Circuit is granted.

And it is further ordered that the duly certified copy of the transcript of the proceedings below which accompanied the petition shall be treated as though filed in response to such writ.

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[fol. 765] SUPREME COURT OF THE UNITED STATES, OCTOBER  
TERM, 1938

No. 479

ORDER ALLOWING CERTIORARI—Filed December 19, 1938

The petition herein for a writ of certiorari to the United States Circuit Court of Appeals for the Ninth Circuit is granted.

And it is further ordered that the duly certified copy of the transcript of the proceedings below which accompanied the petition shall be treated as though filed in response to such writ.